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Professor Hideo Fujii on his 70th birthday

This volume of *al-Rāfidān*, our institutional journal in series, is dedicated to Professor Hideo Fujii by his associates and colleagues on the occasion of his 70th birthday. The wealth of the contributors to this volume and the diverse nature of the subjects covered are in themselves a witness to prove that he has an enormously wide acquaintance with researchers in West Asian history.

Professor Fujii was born in Tokyo on January 27th, 1927. He graduated at Tokyo University of Literature and Science in 1950. After completing the postgraduate at this universiy in 1954, he assumed his first duties as associate professor at Kokushikan University in 1961. Ever since, he has been devoting himself to his own research into Mesopotamian history, and also making every endeavour for the educational property of the university.

Professor Fujii was installed as professor at Kokushikan University in 1966. Three years later, he discovered the archaeological site of at-Tar Caves in the south-western desert of Iraq near Karbala. In 1971 to 1975 and in 1977, expeditions under his directions carried out excavations at this site, uncovering ancient burials with a large number of well-preserved textiles. The enormous collection of the textiles has been providing researchers in Mesopotamian textile history with unique and invaluable information, and is still being researched in Japan under his leadership.

Professor Fujii energetically succeeded in establishing the Institute for Cultural Studies of Ancient Iraq in Kokushikan University in 1976. Since then, he has been organizing and directing the Japanese Archaeological Expedition to Iraq many times, with every facility for the expedition based on the institute itself. As the director of the institute, he also has been actively presenting his research results in *al-Rāfidān*, of which Volume 18 has been just published here as the special one dedicated to his 70th birthday.

Professor Fujii contributed to the Salvage Projects in Iraq as well, through participating in rescue excavations in the areas to be under water by construction of dams : the Hamrin Dam in Hamrin, the Qadisiyeh Dam in Haditha and the Saddam Dam in Eski-Mosul. In the rescue work from 1977 to 1986, expeditions under his directions excavated 14 sites and surveyed several, many of which later proved to be of high degrees of importance in Mesopotamian history. Among the sites excavated during this period are Gubba and Songor in Hamrin, 'Usiyeh in Haditha, and Jigan and Fisna in Eski-Mosul. Many young people joined the rescue work, and most of them are now playing active roles in West Asian archaeology.

Toward the close of the rescue work, Professor Fujii resumed the excavations in the Iraqi south-western desert. Expeditions under his directions worked at the at-Tar Caves in 1984, and at the site-complex of Ain Sha'ia and Dukakin Caves in the south-western desert near Najaf in 1987 to 1989. One of these expeditions surveyed Kish and excavated it preliminarily in 1989. In 1990, he surveyed several sites in al-Adaim, the area for a new dam project, together with a member of the institute.

While away from research in Iraq and administrative duties in Japan, Professor Fujii has visited Italy, Poland and U.S.A., giving lectures on the at-Tar textiles and his archaeological work in Iraq at institutions in these countries. In 1987, he visited Great Britain as Visiting Professor to the British Academy, and gave lectures at six universities there. And in 1991, he visited Germany as Guest Professor to Ludwig-Maximilians-Universität in München to give lectures at the Institut für Vorderasiatische Archäologie.

Particularly to be mentioned about Professor Fujii are his energetic efforts to get financial supports from governmental and private organizations : from Kokushikan University, the Japanese Ministry of Education, Science, Sports and Culture, the Japan Private School Promotion Foundation, and private foundations such as the Ishibashi Foundation, the Toray Science Foundation and the Mitsubishi Foundation. There is no shadow of doubt in that our research and excavations in Iraq could not have been realized without his painstaking efforts and heartwarming supports from the organizations named above.

Professor Fujii is currently addressing to archaeologists all over the world to involve themselves in

the protection of our human cultural heritage, appealing to them for their participation in restoring the lost heritage back to original places. In 1994, he played a major role in organizing the Baghdad Conference on the Stolen Antiquities from Iraq. The following year, he visited the headquarters of UNESCO in Paris, and requested Dr. Fredereco Mayor, Director General of UNESCO, and his executive colleagues to take necessary means to monitor the damages which had occurred in the Iraqi cultural heritage during the "Gulf War". In September 1996, Professor Fujii published *Lost Heritage : Antiquities Stolen from Iraq's Regional Museums : Fascicle 3* from our institute.

It is not for me here to review and comment on all the articles and work Professor Fujii has achieved. They all attest his efforts based on his affections for Mesopotamian history and its major successor, Iraqi people. Thanks to the friendly relations he has created with archaeologists in Iraq, there is a mutual understanding now gradually deepening between the Iraqi and the Japanese peoples on a larger scale.

We express our gratitude to Professor Fujii who has been working hard to make our longing for research into Mesopotamian history a reality. We wish him many happy years hereafter and anticipate for him a bright future of research still continuing in Mesopotamian history.

Katsuhiko Ohnuma
Editor in charge
March 1997

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SPECIAL VOLUME IN COMMEMORATION OF
THE 70TH BIRTHDAY OF PROFESSOR HIDEO FUJII

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国士舘大学イラク古代文化研究所

as-Sayyed Fuji (FUJII *SAN*)

Dr. Muayad Said DAMERJI*

Professor Hideo Fujii is for sure one of those scholars who have dedicated themselves to their field works and academic lives.

He was, and is still, the friend and the well accepted partner of all the colleagues in the Department of Antiquities in Iraq. I still remember the first time when we met in Haneda Airport in Japan in 1977. It was as if we had known each other since a long time before.

It was my first months in the Department, and the job administration and Japan were both new to me. But, the most critical situation I was waiting for vanished immediately after meeting Prof. Fujii. He gave me the impression that my thoughts, ideas, or wishes, which were very humble, were normal and the reality. It was my first lesson in Japanese collegiality and diplomacy, and Fujii was my first indirect teacher.

Back in Iraq, we came close together through the Salvage Excavations at Tells al-Gubba and Sungur. These excavations were hits in the Mesopotamian archaeology. The round building at al-Gubba is still a mystery, and the thoughts we were sharing about it are still alive. At least in the interpretation of archaeological discoveries, we were able to build a basis for productive discussions.

From Fujii *san* I learned the secret of joining the humor with seriousness and using them together, especially when stress and tensions during fulfilling a task or routine job came upon us suddenly. I still remember the way he laughed or he asked even when the question was very embarrassing. This way of Fujii *san* was always joined with a shy laughter, making you willing to answer.

Fujii *san* has been the leader of very fruitful campaigns in the at-Tar Caves near Karbala, in Tells Sungur and al-Gubba in the Himrin Dam Salvage Excavations, and later in the site-complex of Ain Shayia and Dakakin Caves near Najaf.

The discoveries of the textiles from the at-Tar Caves is a main chapter in the cultural history of Mesopotamia. The research of these textiles are still not closed to the end. Years of the associated works have been taking place in many Japanese institutions, and the results have been established and shared by many researchers and scientists in Tokyo, Kyoto, and Nara.

I can not imagine that this hard work has been fulfilled without Fujii *san*. His leadership to the organized work brought for the first time a bunch of information about the textile and textile craftsmanship in ancient Mesopotamia.

The round building at Tell al-Gubba, one of the largest constructions of this kind of building known in the ancient Near East, is still one of important discoveries in the history of architecture. This discovery is connected to his name, too. Later, other round buildings were discovered in the area of Himrin or Diyala, such as the buildings at Uch Tepe and Tell esh-Shok smaller, which are of the same category and are also well planned.

The underground irrigation canals at Ain Shayia in a desolated area in western Iraq near Najaf gave us new information about the water supplies and the common civil engineering in the pre- and in the Islamic periods. The discovery of this irrigation system proved that the Kahariz system was more efficient than opened water canals in desert-like areas.

I believe that Fujii *san* had very lucky days in Iraq, combined with a strong wish to accomplish his

* Director General, the Directorate General of Antiquities and Heritage, the Ministry of Culture and Information, Baghdad, the Republic of Iraq

job and the hobby at the same time and to dive deep in the cultural history of Iraq. His work in Iraq began in 1969 and continued on till the last days.

After almost 20 years, I learned another personal secret of Prof. Fujii which gives us a very clear picture of this man-friend Fujii and his devotion to archaeology and to Mesopotamia. He financed his excavations in the at-Tar Caves through the money he raised by means of selling the estate-property of his ancestors – where his parents are laid in peace – in Ito. On this property now, the Japan Society of Caligraphy is established.

We did really miss him in Iraq in the last years, but he was there whenever we believed to see him.

In Baghdad, in order to monitor the damages which happened to the antiquities in the last war against the so-called Gulf War, which I believe was of a World War caliber, Fujii *san* checked the volume of the damages and offered his personal help.

In Paris, with other colleagues or alone, he met the Director General of UNESCO, Mr. Fredereco Mayor, encouraging him to take the necessary measures for monitoring and evaluating the damages which happened to the Iraqi cultural heritage. And, Fujii *san* encouraged the state members of the Hague Convention of 14/May/1954 to involve themselves in the effective protection and in helping to return the Iraqi Lost Heritage, demanding them to support the Department of Antiquities with documentation material and photo supplies.

Fujii *san* built a house in Kish for the excavations that are newly planned now. A master piece in the art of accommodation in the field for archaeologists! We decided to call this house Fujii House. We hope with this nomination to honour his efforts and attitude to the people and the Department of Antiquities in Iraq.

And at last, I must also mention that Prof. Fujii is the one who brought the kind support to Iraq and introduced it to a wide public.

I hope to Prof. Hideo Fujii all the best in his life and work. May God guide him to Everlasting Happiness.

SOME HYDRO-SCIENTIFIC ASPECTS OF ARABIA

Hisao WUSHIKI*

Introduction

The areal extent of Arabia is vast, stretching from the Mashraq (the sun-rising Arabia), the Yemen, to the Maghrab (the sun-setting Arabia), the Morocco.

Although the area is tremendous, present day's Arabia is located mostly in the arid part of the world. This environmental condition has given a burden: scarcity of water. People have been struggling against it in developing their own life. Such challenge, however, has led the people to the intensive efforts in creating technical solutions to otherwise unmanageable hindrance against life. Needless to say, the traditional hydraulic systems of Arabia are the achievement of the efforts.

The traditional hydraulic systems were created in the long historical procedure and impress foreign visitors into great admiration. The "qanat" system, a hydraulic system represented by an underground water conduit, is a typical example, and it has various local naming which reflects the large geographical dimension of Arabia: Falaj in Oman, Foghara in Algeria and Khattara in Morocco. Qanat systems are so old-rooted in the locality that people often do not know the time of the construction and the location of the water source. In addition, the local nomenclature of the system does not always designate specific constituent of the system, but implies the system as a whole: Falaj in Oman consist of sub-surface conduits, open canals, distribution channels, dams, underground dams, etc.

Traditional dry farming is another item which deserves appreciation. The ancient water harvesting for dry farming by Nabateans (ca. 200 B.C. to 330 A.D.) has attracted popular and scientific interest since the modern Israelis challenged restoration in order to find feasibility for the present days' application (Ambroggi 1966; Evenary *et al.* 1961; Kedar 1957; Evenary and Koller 1956). The same farming method is still in practice by Yemenis and their neighbours in South Arabia. But their modernization and social strain driven by the rapid development of oil-rich Arab countries drained rural population and eventually induced devastation of the long maintained indigenous agriculture. In contrast to Arabia, in the drought-torn Sahelian region people have been passionate in recent years to introduce water harvesting for the restoration of their own farming (Rochette 1989). Their technical know-hows have been developed, being stimulated by the ancient Arabian farming (Critchley and Siegert 1991; Reij *et al.* 1988).

In the latter half of this century, several scientific campaigns on the arid region were launched by the international organizations. The UNESCO "Arid Zone Programme" started in 1951 as an international post-war workshop which directed the attention of the world scientific society to the desert, a potential region for development. The programme was seemingly organized for ameliorating the antagonism between nations in the region in the post-war epoch, represented by the hostility between Jews and Arabs in the East Mediterranean. Futuristic pictures drawn by the Programme may have encouraged people to cooperate for the development and diverted them from the contemporary political tension. The project produced 29 volumes of the "Arid Zone Research" reports and concluded in 1962. Knowledge was accumulated for better understanding of the region and for the innovation of the development work there. UNEP (United Nations Environmental Programme) was set up in 1972 under the threat of the global degradation of environment. It took action against two droughts in the semi-

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arid region of Africa and the Middle East: 1968–1972 and 1981–1985.

These international campaigns subsequently initiated numerous researches, and increased scientific knowledge on the environment of Arabia in both ancient and present time. Besides these non-profitable schemes, commercial exploration for the natural resources development also produced massive information to the region, particularly about the remote areas, which had been inaccessible without giant organization and finance, never available for such small groups as archaeological parties. Newly acquired knowledge has contributed not only to the policy making of the Arab countries, but also to the historical and archaeological research activities there.

In this paper the author will try to cast light on the modern and ancient environment of Arabia from the hydro-scientific point of view, following the concept of hydrological cycle which denotes the dynamism of our planet in general.

Atmospheric and meteoric water

The characteristic of the Arabian atmosphere, the aridity, is not actually the scarcity of moisture in the atmosphere. It is well-known fact that in the Gulf region the summer atmosphere attains 95% of relative humidity at the temperature of 50°C or more. Such atmosphere contains almost five times more water than the Japanese atmosphere in the Tsuyu (Monsoon) season. The region is known to support vertical water vapour transport, including sea-surface evaporation, of more than 4, 000 mm of equivalent annual precipitation (Peixoto 1970).

Such high humidity is observed sometimes as thick fog and heavy dew in many places in Arabia. In Carmel of Palestine a pioneering work was done to determine the contribution of dew in the local water input at the ground surface. According to the observation of eight consecutive years, dew precipitation was measured to culminates in the summer season, the driest season in Palestine. And it amounts to some 30 mm of rain equivalent annually (Duvdevani 1947).

The scarcity of precipitation is governed by the General Atmospheric Circulation. The concept is based on the averaged global convection pattern of the air, projected on the meridian section of the Earth's atmosphere. The latitudinal zone, called sub-tropical high pressure zone, is a stable atmospheric subsidence zone, just located over Arabia. In the sub-tropical high pressure zone, the air-mass subsidence oppresses the lower atmosphere not to make convection, and eventually prevents air from forming rain clouds. The subsidence is the compensation of the convergence of the air-mass in the upper atmosphere, maintained by the ascent of tropical air in the equatorial zone and in the temperate low pressure in the higher latitudes (Fig. 1). But the fringing zones of Arabia are influenced by the two prevailing systems: the westerlies system from the Atlantic and the Mediterranean, and the easterlies system, or trade-wind system from the Indian Ocean.

In the westerlies system, low pressures develop periodically and migrate to the east, transporting water vapour at the northern fringe of Arabia. By the convectional movement of the atmosphere, the low pressure provides precipitation in winter season when the system advances to Arabia from the north.

In the easterly system, Indian Monsoon makes slight penetration into the south-eastern part of Arabia in summer season, humidifying the coastal zone supporting precious green stretch, Dhofar of Sultanate of Oman. However, most of the western part of Arabia remains arid during the season of trade wind; only Mauritania, Sudan, Yemen and Somalia

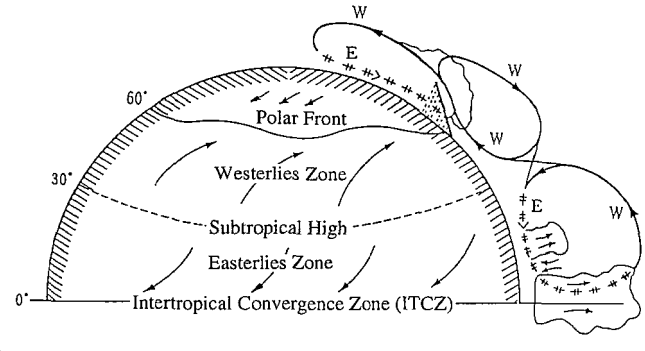

Fig. 1 General circulation of the atmosphere (after Rossby 1941).

receive a feeble rainy season by the reinforcement of ITCZ (Inter-Tropical Convergence Zone) which extends the convectional cloud activity. In addition, Indian Ocean cyclones come near or even land on the Arabian Peninsular contributing appreciable amount of rain, albeit capricious[1].

Thanks to the advance of atmospheric sciences, nowadays we have understood more about the formation process of precipitation. Precipitation is initiated by the condensation of atmospheric water vapour in the process of which freezing of supercooled water droplets takes very important role, triggering the selective formation of large-sized cloud droplets, and eventually reinforcing aggregation of rain drops and snow flakes. But droplets of pure water do not freeze spontaneously in the absolutely clean air until the temperature reaches lower than –39°C (Schaeffer 1948); the temperature at the snow formation level in the nature is much higher than this and sometimes quite close to 0°C. These phenomena strongly suggest special activity of minute airborne dust, or aerosol, which breaks supercooling. It is another well known fact that water condensation does not happen easily in the dust-free and water-saturated air; supersaturation of water vapour prevails in the clean air mass. In short, the atmosphere requires dust for the formation of cloud and then for the formation of rain or snow, even if plenty of water vapour and preferable instability of air mass, an aerodynamic field for cloud formation, is available.

As discussed above, there are two kinds of dust which act in the formation process of meteoric water: dusts for the condensation nucleation and dusts for the freezing nucleation. The former dusts are called condensation nuclei, and the latter ice nuclei. Among the condensation nuclei, sea salt particles are important, which stormy weather produces in great number at the sea surface (Toba 1966). In the Arabian region, high production of salt particle proceeds in winter in the Atlantic Ocean and the Mediterranean Sea, and in summer in the Arabian Sea. As the ice nuclei clay minerals are well-known, often identified in the aerosol sample. In the arid environment, clay minerals are not efficiently produced in situ due to the scarcity of water, but in Arabia there are vast outcropping areas of the Tertiary mudstone or marlstone, which contains clayey components. Clay minerals have water in the structure and acquire strong nucleation ability when pre-activated in the low temperature of high altitude atmosphere[2]. In summary, it is a general tendency that the continental environment supplies active ice nuclei and the marine environment salt particles as active condensation nuclei.

A typical pattern of the aerosol-composition was obtained, depicting the above explained characteristic difference between marine and continental air-mass (Wushiki 1971) (Fig. 2). The measurements were made in the East Mediterranean, at Jerusalem, when the two typical air-masses became dominant in turn after the passage of a winter low pressure over the region.

In the figure, easterly wind prevailed during the approaching period of a low pressure system, and the concentration of ice nuclei remained at a high level. In the East Mediterranean, the easterly winds blow from inland, transporting airborne material of continental origin. When the low pressure had passed to the east into the Arabian Peninsular, the wind changed the direction and started blowing from the sea. In the figure, the atmospheric concentration of salt particle got increased quickly as the wind direction made shift from the east to the west, giving a strong contrast to the preceding easterly air mass.

The change in air mass is not only limited within the diversity of aerosol species, but occurs in the isotopic composition of the water vapour. Such quantitative difference reflects itself on the isotopic composition of the condensation products, i.e., rain and snow. The difference in the condensation products may simply represent the difference in the source vapour, but other atmospheric process should be considered for the rigorous estimation of the source vapour.

---

1) In May, 1982, a strong storm landed on the South Yemen and poured disastrous rain which continued for 36 hours with a total amount of 2,500 mm. Although the event was stochastically estimated to occur once in 3,000 years, it destroyed nearly 6,000 ha of the productive cultivation and left 50,000 people desolated (George 1982; Kutschera 1982). From 1981 through 1983 the south-eastern coast of the Arabian Peninsular received an appreciable number of cyclonic rain. As the outcome of the event, the author observed that the rain water had maintained lush vegetation for about three years in the several localities in the midst of the desert.

2) Natural ice nuclei were observed to lose the ability when heated to the ice-melting temperature. The phenomena were regarded as the proof of natural pre-activation of the nucleation material in the low temperature of the high atmosphere (Higuchi and Wushiki 1970).

In the Mashraq region, i.e., the eastern end of Arabia, the coastal climate along the Arabian Sea is under the influence of the Indian Monsoon. The regional precipitation is scarce in general, but the majority of the rain occur during the summer monsoon. In the rest of the year, there happen some rains, but only sporadic. In the Omani territory of the coast, called Dhofar, the tendency of monsoonal climate is particularly enhanced, creating a stretch of lush green vegetation through a rain formation which is characteristic both in the rain type and isotopic composition.

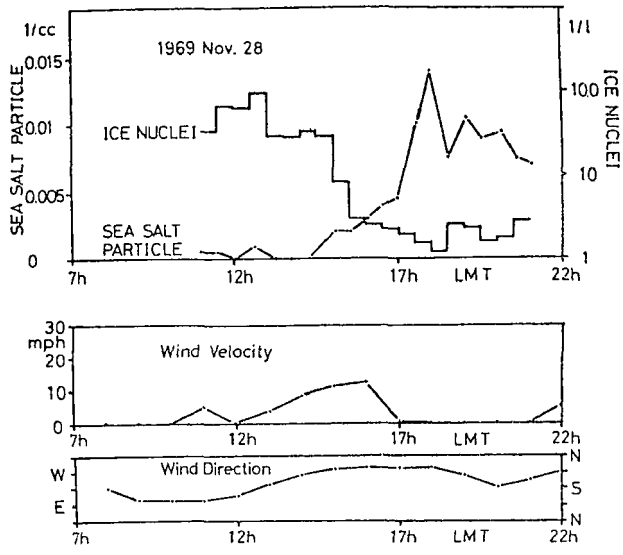

Fig. 2 Simultaneous observation of sea salt particles and ice nuclei at Jerusalem.

As for the rain type in the Dhofari summer, the formation period of the rain drops is not long enough for the air to get matured as fully grown rain clouds due to the local geomorphological condition: The air lift can occur only within a narrow belt of the coastal range, ca. 1,000 m lift in ca. 30 km of maximum width, so the passage period requires less than one hour for the monsoonal wind. Eventually the rain precipitation takes drizzle type, or foggy rain.

A remarkable seasonal change was observed in the stable isotope content of the rain water (Wushiki 1991): In a clear contrast to the rains of other season there, the monsoonal rain assumes a peculiar and narrow range of isotopic composition, which can be described as isotopically monotonous. But in other season, the isotopic property of the rain are quite diverse, ranging widely in the concentration. This hydrochemical speciality is presumably determined by the regional geographical and environmental conditions raised above: The monsoonal air mass approaches the Dhofar Coast after the sufficient sea-air exchange of water elements (stable isotope of oxygen and hydrogen[3]), attaining an equilibrium level of isotope content in the air-borne water vapour. Indian Monsoon system is one of the largest global atmospheric system, covering the Northern Indian Ocean and connecting the East African tropical easterly zone to the Tibetan Plateau anti-cyclonic system. So the marine environment has an established thermal and chemical properties, consequently provides specific and stable properties of the air-borne water. The coastal morphology causes the precipitation by the forced air lift, but the coastal terrain acts as prefixed processing system and unique isotopic composition is resulted in the condensed water.

In Fig. 3, the analytical measurements are presented for the two sampling sites along the passage of

3) In early 1960s, stable isotope ratio (or content) of water, i.e., $^{18}O/^{16}O$ and D/H, were intensively studied, and meaningful correlations were discovered for the meteoric waters collected from all over the world.

Craig derived following empirical equation (Craig 1961a),

$$\delta D = 8\,\delta\,^{18}O + 10.$$

where δ D and $\delta\,^{18}O$ are defined as per mille deviation of the isotopic ratio of each isotope component from a standard water, called SMOW (Standard Mean Ocean Water), the absolute isotope ratios of which have been detemined (Creig 1961b; Baertschi 1976; Hagemann *et al.* 1970).

On the basis of experimental facts (Craig *et al.* 1963) and theoretical consideration, Dansgaard and Gat gave signification to the equation coefficients, generalizing Craig's equation as below (Dansgaard 1963; Gat 1966),

$$\delta D = s_i\,\delta\,^{18}O + d,$$

on which they discussed s_i and d of a suit of waters in a hydrologic system to be determined by the extent of kinetic process in isotopic exchange during evaporation/condensation. s_c was deduced to be close to 8 under equilibrated evaporation/condensation, theoretically deduced from the fractionation factors reported by Majoube (Majoube 1971), but it deviated from 8 to a smaller value when the system went through non equilibrium process (Craig *et al.* 1963). d was explained to be determined by the initial evaporation condition from the vapour source: Where the evaporation was intense, d tends to give a greater value, but vapour from the equilibrium evaporation gives zero for d.

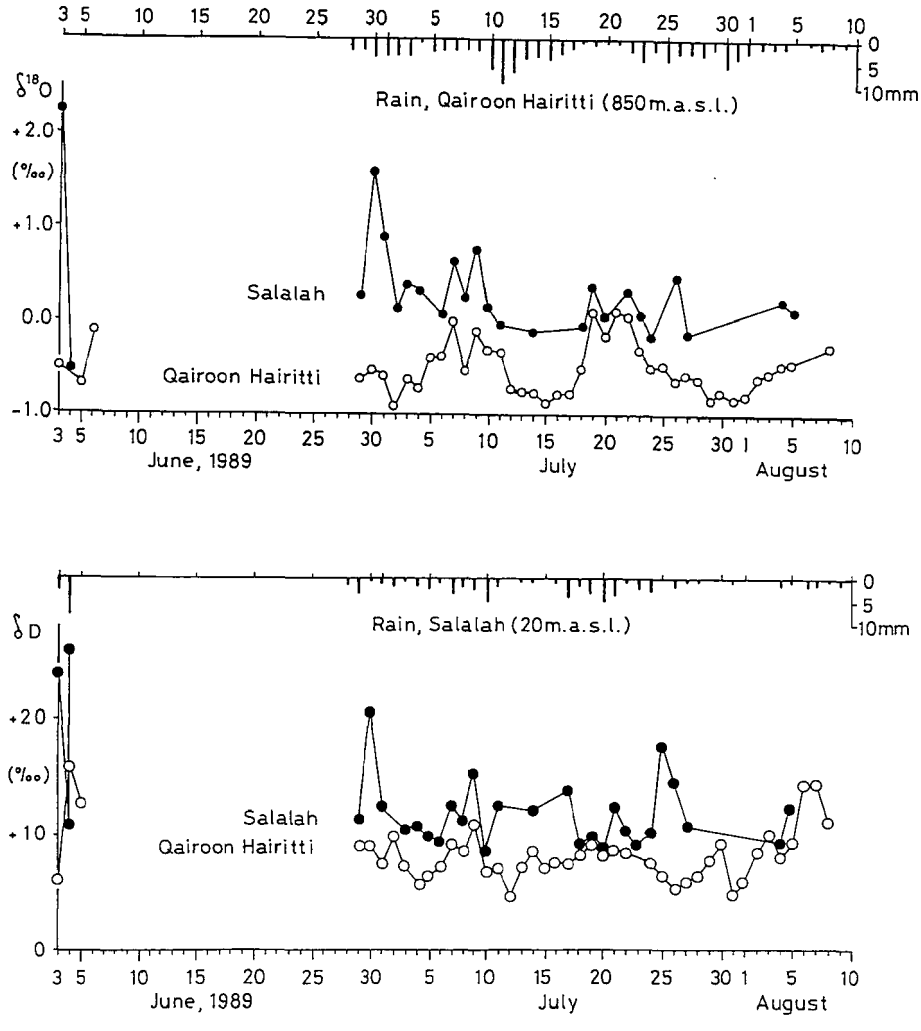

Fig. 3 δ D and δ ^{18}O variation of the monsoonal rain on the Dhofar Coast, Oman.

the monsoon winds, Salalah on the coastal plain and Qairoon Hairitti on the coastal range. The monsoonal rains are found quite enriched in heavy isotopes, and averaged δ D and δ ^{18}O are + 0.41‰ and + 12.4‰ at Salalah, and – 0.51‰ and + 8.0‰ at Qairoon Hairitti, respectively. The variation ranges are also narrow, i.e., 20‰ for δ D and 3‰ for δ ^{18}O, suggesting the meteorological procedure discussed above. The isotopically enriched atmospheric water seems to migrate far north, reaching the Oman Mountains, and seems to contribute to the rain at the summit area. Consequently the summer rains hold narrower range of isotope ratio than the winter rains.

It is probably the due course to exploit more the results of the modern geo-scientific researches in interpreting the natural phenomena, indigenous and unique in Arabia. Cloud physics and isotope hydrology can be regarded such sciences for the atmospheric field, as the author has stressed in this section.

Surface water

Surface waters are classified into three groups: Surface run-off, fluvial water and lacustrine water. Although rainy occasion is less frequent in arid Arabia than in the wet region of the higher and lower latitudes, surface runoff happens rather easily almost everywhere there. When it happens, it occurs as sheet-flow on the gentle slope covered by the weathered material. Fluvial waters are also less there, albeit great rivers flow through the region: The Nile, the Euphrates and the Tigris are flowing through Arabia, replenished in the remote basins which belong to the different climatic zones. However, there

ıre many ephemeral flow courses in which water exerts erosional action and contribute much to the ·egional geomorphological evolution. In Arabia, lacustrine waters are not as substantial in existence ıs in the temperate and the arctic zones of our planet. Lakes are not many and apt to be saline and :emporary. Large lacustrine surfaces appeared in the recent decades as the achievement of civil ɜngineering. Most of them are the dam-lakes, such as the Lake Nasser, dammed by the Aswan High Dam upstream of the Nile. But some of them are the products of reviving works on the dried up lake ɔasins, previously caused by the climatic change. Long canals were constructed in order to drain excessive river water into the basins initially for flood-control and later on for multi-purpose utilization. The typical examples are the twin man-made lakes in Iraq, called Lake Tharthar and Lake Razazah, which store flood water from the Tigris and the Euphrates, respectively, in the snow-melt inundation season.

In the arid part of Arabia, local precipitation causes mainly surface runoff and ephemeral fluvial flow. And these surface waters are the genuine products of the local hydrological cycle, not like the water of the large rivers recharged in the different climatic zones. However, they do not contribute much to the sustenance of the perennial river flow. In this section, surface runoff and subsequent ephemeral flows in wadi are to be focused.

As widely observed at the rain occasion, the behaviour of barren ground of the arid region is different from that of well vegetated one in the wet climate: Surface runoff occurs more easily at lighter rain fall. In addition, once it rains in the arid region, the intensity is often higher than in the milder climate, eventually amplifying the surface runoff. This tendency is ascribed to the subsurface soil structure; fine grained soil crusts are extensively found in the barren terrain in the arid environment. The crusts diminish the soil infiltration, acting as a barrier against infiltration. They are formed because of poor vegetation and destruction of soil aggregates. In the temperate climate, rich vegetation generates thick soil aggregates and vertical root voids, both of which are preferable for the improvement of water infiltration and water retention of the soil[4].

The aptness of the surface runoff in the region is remarkable, but the frequency of the event is governed by the occurrence of rain. As a general tendency, variability of annual rainfall increases as the total annual amount decreases. In the Negev region of Palestine, such variability exceeds 131% in the zone of 37 mm or less of annual precipitation (Katsnelson 1964). This means that there exists a spell of years without rain at all in the extremely arid region. However, at some increased rainfall level like in the semi-arid region, people can expect some rains every year in spite of the scarcity of rain and the shift of the raining spots.

Earlier in this paper, the author mentioned a unique water utilization method, called water harvesting. The origin was dated back more than 2, 000 years, i.e., in the 3rd century B.C., when Nabateans deployed their commercial colonies from the East Mediterranean Coast to the depth in the Arabian Peninsular. They strived to create agriculture in their semi-arid land, where annual precipitation ranges between 100 to 200 mm even in these days. Their method evolved along with the time, leaving the marks of progress in the ruins still discernible at the numerous sites (Fig. 4).

During 1950s and 1960s, several ancient sites were intensively studied on the Nabatean works (Evenary *et al.* 1961; Kedar 1957). The study sites were in the Israeli part of Palestine, and located in the hills and on their outskirts. Although the ruined sites conserves multiple stages of the historical

4) Soil formation consists of several horizons. Under the favourable climate, macro and micro biological activities, together with geochemical one, develop a metastable status in the shallowest soil horizon, both physical and chemical. The resulted soil structure is very porous with many voids and interstices, particularly characterized by aggregates. This complex structure, combined with plant root network, holds high infiltration ability and high water retention capacity. For instance, at the densely vegetated ground surface of the broad-leaved forest in Japan, surface runoff does not occur even at an extreme rain intensity of 80 mm/h, a level of disastrous rain fall. In the arid region, however, such pedological condition is poorly developed because of the scarce biological activity. Poorly developed soil structure is even easily destroyed by the physical action of the nature: Rain water infiltrates into the soil with weathered fine material and discomposes the aggregates, extensively generating fine-grained crusts of less permeability (Evenary *et al.* 1961).

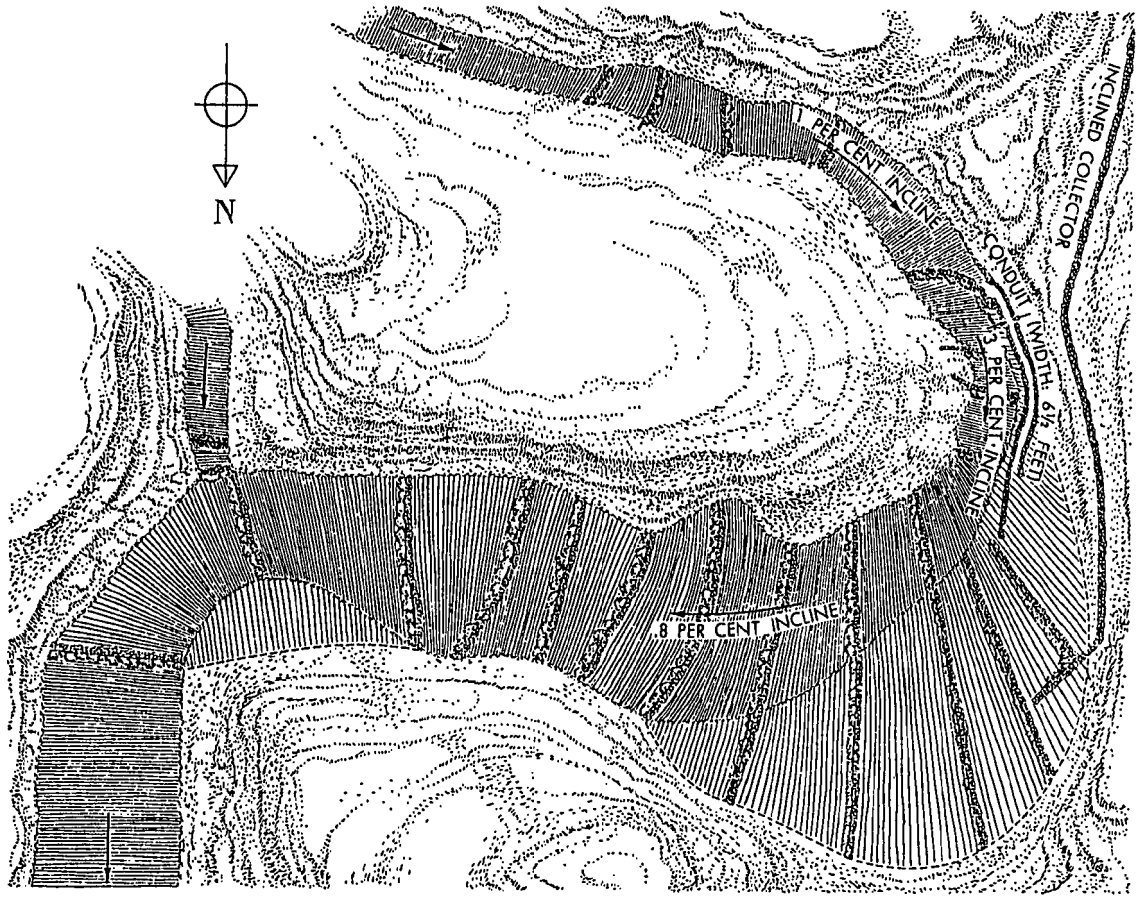

Fig. 4 A plan of an ancient water harvesting structure in the Negev (Ambroggi 1966).

development in the ruins, the sites assume an eminent appearance in common, appealing the ancient background concept: The ancient settling centers are surrounded by a large area of artificially modified ground surface, intentionally worked for collecting and retaining more surface runoff from the slope for their civil life and agriculture. The modified surface consist of systematically disposed gravel mounds, terraces, rock walls and ditches. Many underground cisterns are also left.

There are clear remains of cultivation in the modified surface area. However, the apparent cultivation areas occupy only one thirtieth to one twentieth of the total extent of an identified land-use assemblage. In the early period of the study, there was a dispute whether gravel mounds made effects on collecting dew or fog water on them to sustain grapevines cultured around them. Such effect was denied, but more detailed explanation was given, in which the role of sub-surface soil structure was stressed. The construction of gravel mound; in other word, the removal of surface gravel, was recognized as an effective method destroying the upper structure of soil to decrease the surface infiltration and increase the surface runoff. As already mentioned, the same effect was observed to be induced by the reduced vegetation and to be caused by the destruction of soil aggregates by rain water. Ancient Nabateans may have established this unique method by ingenious, but lengthy, attempt seeking for the maximum exploitation of their environment. They certainly engaged in the attempt with careful observation of the nature. Probably there were many trials and errors before achieving the success.

Actually the method is very delicate in balancing the increment of surface runoff with the increased erosive action of water consequently resulted. In the long spell of Nabatean activity in the region, their agro-hydrological facility seemingly underwent self-induced geomorphological development. In managing their farms, ancient farmers and civil engineers were not perfectly successful in controlling the erosion and deposition, which happened inevitably in any fluvial process. In a long run the farmland

evolved into the multi-terraced morphology due to the continuous transport of detritus and weathered materials into it from the catchment area. The terrace level of the farm gradually increased as the runoff water flowed in. Later on anomalous floods triggered gully erosion in the terraced farm and the farm faced devastation. Such devastation may have been evaded by the construction of new hydraulic structures. Counter works were carried out until the retreat of Nabateans from the region in the 4th century A.D. at the departure of Romans from Palestine.

The Nabatean runoff irrigation ceased operation at their diaspora, but similar methods were practiced even to the later dates elsewhere in the world. In the neighbourhood of Arabia, in southern Baluchistan particularly, "Gabarband" farming is the one to be mentioned. Gabarband is locally recognized as an embankment of rock work, but apparently they accompanies auxiliary ditches and mounds. The origin and the objective of gabarband were discussed since the exploration of Sir Aurel Stein (1931) (Konishi 1970), and the majority took it for granted to regard gabarband as water reservoir. Concerning the the hydrological basis of gabarband, quantitative evaluation was made and derived a conclusion that the structure could retain only a small portion of the discharge from the catchment. It was presumed that the structure was initially conceived not only for the water collection, but for the soil retention. Heavier stress is placed on the soil retention by some research groups in case of Nabatean structures as well. They point out the fact that soil resources are not always available in the region where water can be collected by the Nabatean structure. In these days there are still many terraced farms in use in South Arabia, particularly in the Yemen. The synopsis of the farm confirms the function in both water and soil retention.

In the recent three decades, people experienced two serious droughts in the semi-arid part of the world. The droughts induced "desertification", or deprivation of soil resources, which caused degradation of land productivity, being amplified by the excessive human exploitation of the nature. Water harvesting, or runoff irrigation, of ancient and present farming attracted attention for finding solution to such disaster.

Water harvesting as a modern technical term is classified into two categories: Rainwater harvesting and floodwater harvesting (Critchley and Siegert 1991). Rainwater harvesting utilizes the direct rainfall and local surface runoff, both to be regarded as autochthonous, but floodwater harvesting depends usually on the ephemeral water flow such as wadi flood, which is of alochthonous origin. In the modern method, in addition to augmenting the surface runoff, two technical components are clearly recognized and applied in the runoff management: spreading and retaining. Augmentation can be attained through the modification of the ground surface, in which surface soil structure is apt to be destroyed and forced to lose retentive ability for water. In short, runoff increment is easily acquired at the expense of the degradation of land productivity, which often results in the vegetation decline and soil erosion. In these days the application of water harvesting is stressed more on the recovery of surface vegetation, eventually spreading and retaining are more intensively practiced, instead modifying ground surface for the increment of surface runoff.

Groundwater

The important role of groundwater in supporting lives in the arid region is undeniable. Groundwater is a focal element in desert, wherever human activities are concerned both at present and in the past, or even in the future. People in Arabia frequently chose their settlement around the site where deep-borne groundwater discharged. Their settlements, i.e., oases in Arabia, are located often in the midst of desolation as if miracles take place. It is not long time ago when science successfully disclosed the facts that there exist enormous subsurface water reservoirs under the desert in Arabia. Sometimes they are called subterranean lakes since the occurrence in the depth extends in the full span of regional geo-tectonic structure, the structural basin. Most part of Arabia lies on the tectonically stable basement, and eventually geological formations are of large dimension in the areal extent. The water bearing formations develop there in the order of thousand kilometers, bringing the recharging and discharging

sites far apart each other. The remoteness between the recharging and discharging sites is not only the distance in space but also in time. Water may spend tens of thousand years before reaching the discharging zone under the piezometric field which sustains the flow. There are many hydrogeological aspects of the deep-borne groundwater left for further scientific study and they wait for intensive exploration. The present trend of the groundwater development in Arabia will stay in risk till the policy for the development is formulated with a substantial amount of scientific knowledge collected by the exploration. It may take long time for such policy to be set forth, because the area concerned is so barren and immense that it demands great investment for implementing such exploratory enterprises. As everyone may agree, such enterprises are not always regarded as feasible and apt to be retarded, although the situation has become imminent in several regions, where people have already faced quick decline of the resources.

According to a regional summary of deep-borne groundwater in the North Africa and Arabia, there are eleven great basins of deep-borne groundwater, eight in North Africa and three in the Arabian Peninsular (Burdon 1977). They are located in the structural depressions, which are disposed in the swell and basin structure of the Afro-Arabian continental entity (Fig. 5). In each basin there are outcrops of water bearing formations, i.e., the aquifer formations, at the fringing zone. These outcrops are supposed to be the zone of groundwater recharge, while recharge is negligible under the present days' climate even if recharging happens. The formations are overlain by the younger ones and increase the depth to the center of the basin. Overlying formations, consisting of several impermeable ones, also get thicker to the center, and the water in the deep-borne aquifers are isolated from the overlying aquiferous formations. However, such isolation is broken where tectonism develops faults and fractures. Deep-borne groundwater seeps up along such structure and creates hydrogeological surface morphology. One of the resulted hydrogeological features from such structure are the springs, the miracles of the desert. The springs are the sites of oasis, a popular term which stimulates human imagination once sounded outside the desert. The seeping-up zone is the zone of water and at least the zone of better moistness, but they are not always friendly to the human life. Instead, there appear vast saline swamps

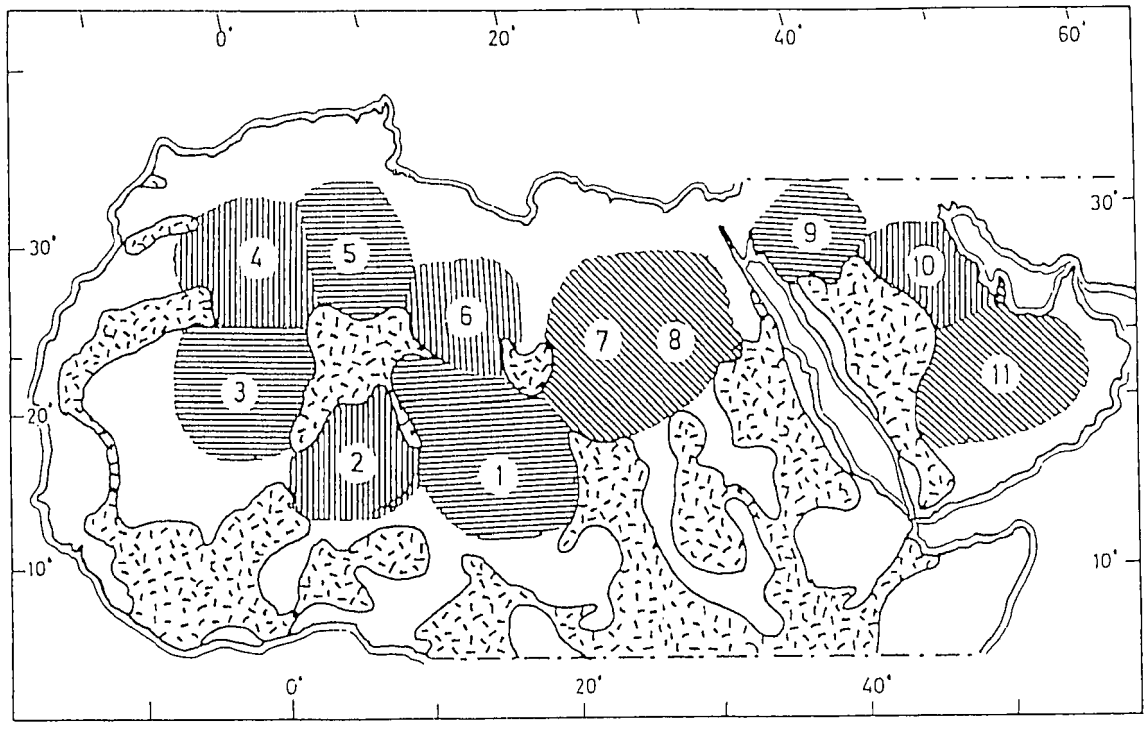

Fig. 5 Major groundwater basins of Arabia and North Africa (Burdon 1977).

and salt crusted mud flats. They are the sites which local people call "Chott" in North Africa, and "Sabkha" in general in Arabia. Quite a little knowledge has been obtained so far about these desert wetlands for the better understanding of the groundwater regime in the basin. The sites are the pivotal ones in basin-wide hydrogeological system, where fundamental amount of water upwells at the last stage of the hydrologic cycle in this spectacular regime. "Inland sabkha", another name for this landform, is often the site of quicksand. Quicksand is an unstable sand deposit liquidized by the excessive water input. Structural seepage zone of groundwater basin can create it in the extreme aridity of desert. Quick sand is sufficiently abominable for the desert travelers to keep them away from there. Only in modern days, scientific explorers dared to make access to the heart of sabkha, or endeavored to traverse it. Umm al-Samim, the largest sabkha in Rub al-Khali, witnessed disappearing of nomad parties and goat flocks under the quicksand when they lost safe tracks in their passage. In the Western Desert of Egypt, vehicles sank out of sight in the quicksand of Qattara depression during World War II (Thesiger 1959).

The major aquiferous formations of these basins are from late Palaeozoic to late Mesozoic and some important ones are from early Cainozoic. The total areal extent of the basin is ca. 6.5 million km^2 which consists of 4.8 million km^2 in North Africa and 1.7 million km^2 in the Arabian Peninsular. As the basins are located in good coincidence with the desertic part of North Africa and the Arabian Peninsular, water resources development in these basins is in great needs wherever people set forth activities there. The storage capacity of these basins are also estimated as ca. 80 thousand km^3 in total, and it is again broken down to 60 thousand km^3 in North Africa and 20 thousand km^3 in the Arabian Peninsular. The total storage capacity, i.e., 80 thousand km^3, roughly corresponds to 2 per cent of the world's actively circulating groundwater resources (Burdon 1977).

As mentioned before, the groundwater stored in these basins does not receive appreciable replenishment due to the present climate system, so its age counts tens of thousand years. This is a strong contrast to the actively circulating groundwater which prevails elsewhere in the world. So it has become popular to call it "fossil groundwater" or "palaeo-groundwater"[5]. The discovery of the resources is actually new and the development started not long time ago. The present exploitation of the palaeo-groundwater should be regarded as mining, although the resource is not same in its occurrence with the fossil fuel resources. But the exploitation without the knowledge of the hydrogeological balance should be regarded as a risky business often encountered in mining.

According to the cross-section of a basin in southern Libya (Fig. 6), thick sedimentary formations overlie on the basement. The thickness exceeds 4, 000 m in Fezzan Province and major groundwaters are borne in the two aquiferous formations (Pallas 1980): At the deepest position, i.e., just over the basement, Cambro-Ordovician sandstones compose a great reservoir, and Nubian-Post Tassilian sandstones of Mesozoic form upper aquifers separated from the former by the several shaly aquicludes. The water in them usually artesian, so the pressured water may gush up over the ground level from the depth of thousands of meters when the aquifer is hit.

Although the development of the palaeo-groundwater in desert is still new in the human activities and accumulation of the knowledge on its hydrogeology is still in slow pace, we have known that groundwater in most of the basins is under a piezometric field which indicates the existence of steady water movement in the depth even without human exploitation. This phenomenon is regarded as a residual flow driven by the residual piezometric gradient which was established once in the past by the proper recharge and discharge and maintained to the present. Without doubt, the residual gradient was

5) Some hydrogeologists describe the deep-borne water as stored in a similar condition with fossil which is in a perfect isolation from the present fauna and flora both in time and in space. The assimilation is not appropriate in some aspect, however, particularly in the storage procedure: Groundwater does not compose the primordial component of the geologic formation concerned, but it is only a temporary attachment accepted in the aquiferous part of the formation. The water in the aquifer may be isolated from the present hydrologic cycle, but the isolation is only temporary and in a relative manner. Isolation extent is variable in the course of the climatic fluctuation. In fact, the isolation of the groundwater is caused by cessation of recharge, but not by the mechanical isolation which is the case with fossils. Conclusively speaking, it is better and reasonable to call the deep-borne and aged water as "palaeo-groundwater".

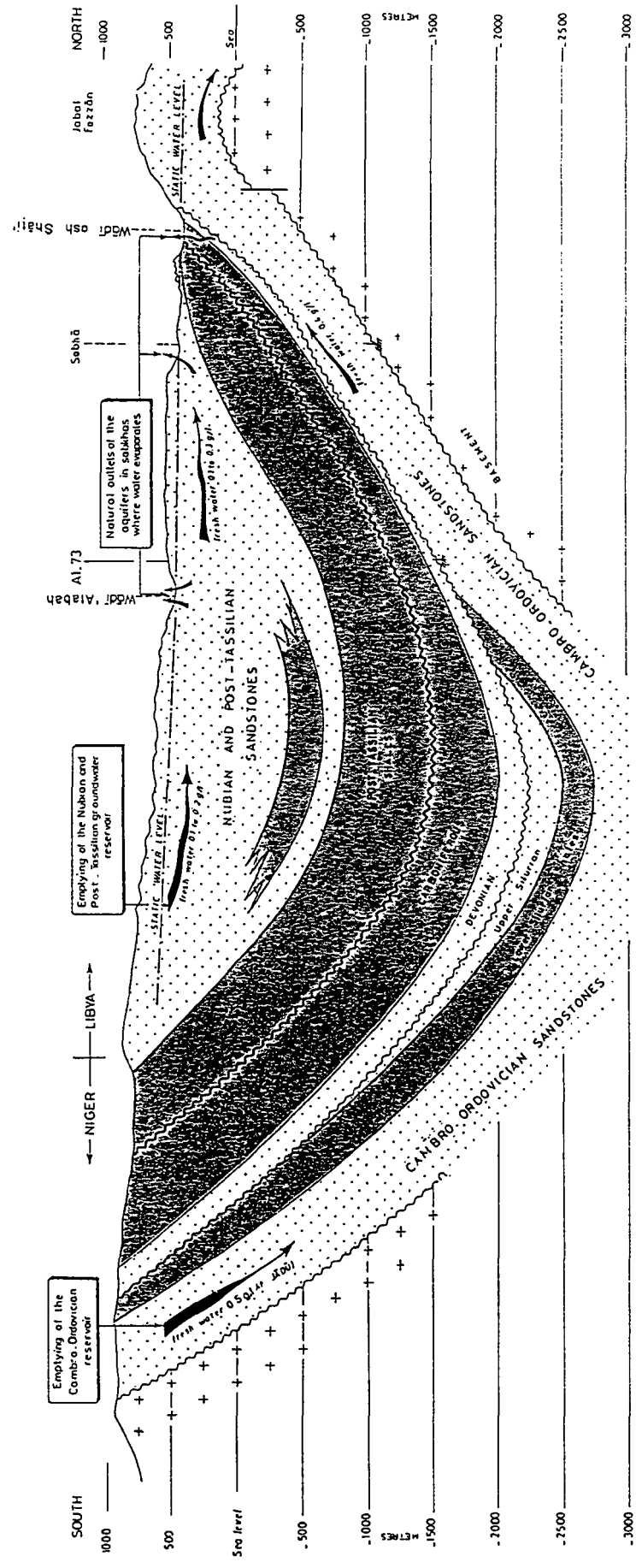

Fig. 6 Hydrogeological cross section of Fezzan Province, Libya (Pallas 1980).

originated from the different climatic period when the region enjoyed more precipitation than the present days. Consequently, it could be said that as a general tendency the palaeo-groundwater is in the dissipation process even without human exploitation. Although the research on the palaeo-groundwater in Arabia is not easily conducted, the knowledge on it will provide great insight both to the human history in the desert and to the futuristic projection of Arabian world.

When Professor Fujii started Al-Tar excavation in early 1970s. The Japanese team made access to the oases in the Abu Dibbis Depression (Fig. 7). The oases aligns themselves from north-west to south-east on the western slope of the large tectonic depression at the eastern margin of the Western Desert of Iraq. The depression may extend north to the Tharthar depression beyond the Euphrates. The region composes also the northeastern fringe of the Nafud basin, one of the three large hydrogeological basins in Arabia. The springs are distributed along the tectonic line consisting of several sub-surface faults (Alsinawi 1972), and their extension may cover almost 200 km. There are at least three localities where springs are swarming with many discharging points. Such localities are supporting thousands of people by the date palm plantations in the isolation from the populated riverside areas in Mesopotamia. However, there are many spots of single discharging point, which are apart each other but still indispensable watering sites for the local nomads. In addition, there are locations which indicate the gradual decline of the spring discharge. In such locations we can find numerous hand-dug wells excavated at the original spring points in search of water. There are many ancient sites, too, in the same zone. The most gigantic one is the citadel of Al-Ukhaidhar, and in the neighbourhood a ruined desert city, called Al-Qusair, is found. Both of them were presumably inhabited by hundreds to thousands people, but sometime in the past, probably around early Islamic period, they were abandoned. Besides political and social reasons, decline of the spring discharge were presumably the cause of the devastation.

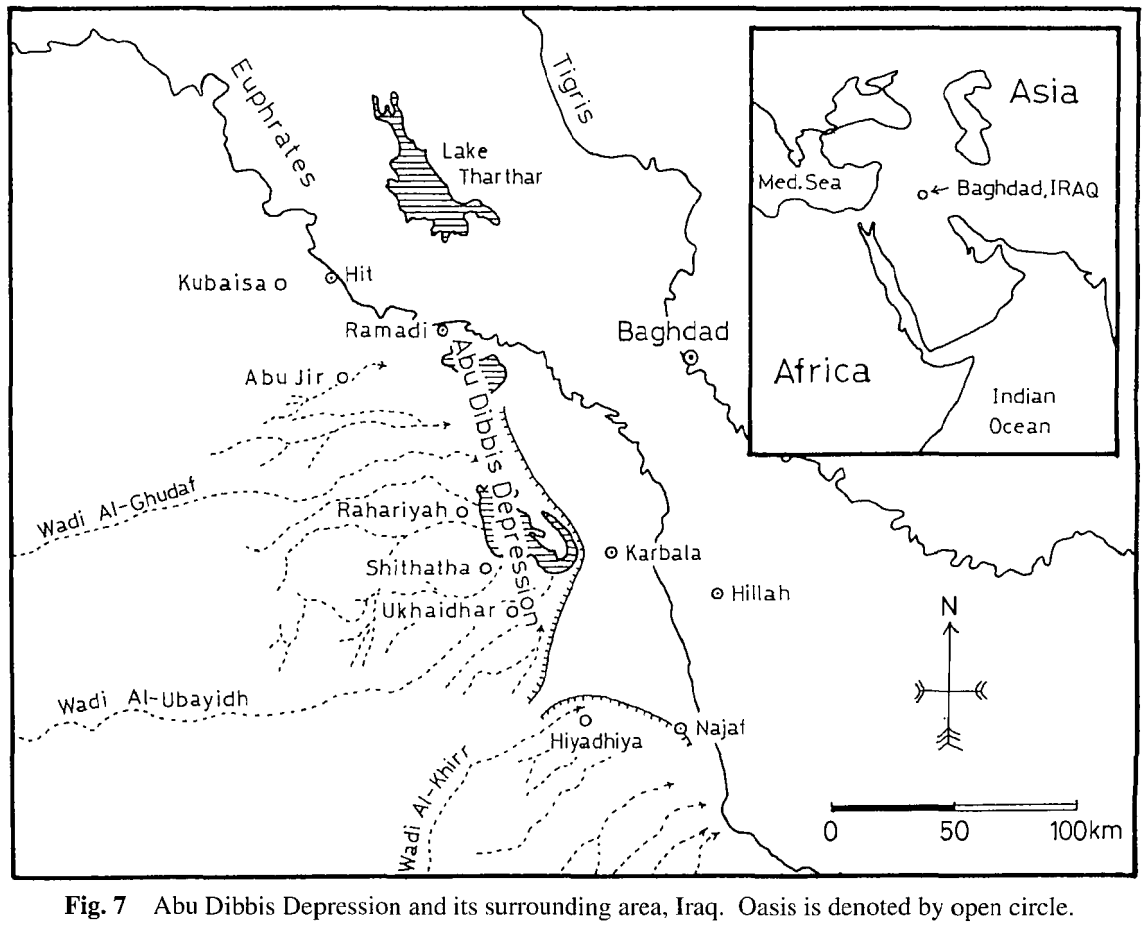

Fig. 7 Abu Dibbis Depression and its surrounding area, Iraq. Oasis is denoted by open circle.

A consecutive study on the hydrochemical property of the spring water in the depression was made in 1970s, and δ D and δ ^{18}O of the spring water showed that the discharge is a mixture of the deep-borne groundwater and the shallow groundwater. In a spell of wet years in late 1970s, 40 to 60 per cent of the discharge was estimated to be the contribution from shallow groundwater in 1977/1978 (Wushiki and Kusakabe 1981). Shallow groundwater was recharged freshly after the serious droughts in late 1960s and early 1970s. The result suggests that the deep-borne groundwater contribute subsistent volume to the spring discharge even in the wet period. As local precipitation is basically unreliable and marginal for supporting the community in the desert, so the decline of discharge from the deep groundwater must have been the major cause for the extinction of ancient community.

In the central part of the Arabian Peninsular, there outcrop Mesozoic sandstones which dip to the northeast and compose major aquifers in the depth. As mentioned before, deep-borne palaeo-groundwater usually flows under the residual hydraulic gradient in the basin and age of the water is distributed systematically, reflecting the regional flow pattern. The ^{14}C dating was observed to increase when pursued downstream along the flow line. The age increased to 34, 800 years at 100 km point from the outcropping site near Ryadh in Saudi Arabia. But just below the outcropping point the age was measured 15, 500 years, while the water table spread only at the depth of 131 m from the ground surface (Otkun 1972). The measured age implies the absence of current recharge, even though the outcropping region receives some rainfall under the present arid climate.

Bahrain, a mid-Gulf island, is widely known of its abundance in spring discharge. The springs issue even from the sub-marine slopes. Now the discharge has been confirmed to be the products at the last stage of groundwater circulation in the Arabian Peninsular. The island is only 691 km^2 in area, nevertheless there are enormous ancient sites which date back 5, 000 years. The Bahrainian ruins are regarded as of Dilmun, which is often recorded in the ancient Mesopotamian documents. Archaeologists uncovered many ancient sites there. Among them they found qanats[6], a sort of hydraulic facility, abandoned due to the declining water head of groundwater (Bibby 1970), the deep-borne palaeo-groundwater in this case. The decline is actually identical with that of residual groundwater gradient.

In the southern fringe of the Arabian Peninsular, i.e., in the Rub al-Khali groundwater basin, deep-borne groundwater in the early Cainozoic formation has entered development stage in 1980s. The major aquifer consists of an Eocene formation, called Umm er-Radhuma. The formation is overlain by aquiclude formations, but it is heavily weathered by karstic action and serving one of the best artesian aquifers in the region. This particular hydrogeological system extends from the Yemen to Oman, presumably covering several tens of thousand square kilometers. The exact coverage of this Cainozoic aquifer is still unknown due to the vast sand dune area of the Rub al-Khali.

The southern part of this aquifer field was investigated in late 1980s, when exploration bore-holes were drilled for down-hole probing and sampling of both geological formation and groundwater. In addition to the geophysical prospecting, hydrochemical and isotope-hydrological works were conducted on the collected water samples (Clark *et al.* 1987; JICA 1989).

The study works covered only a small portion of the Rub al-Khali hydrogeological basin, the total area of which reaches 1. 2 million km^2. Although the study area was small, residual gradient was confirmed extensively in the aquifer at least in South Oman (Parker 1985). The regional hydraulic gradient was observed as 5.4×10^{-4}. Similar gradient of 5.0×10^{-4} was measured in the Western Desert

6) The technical origin of qanat has been discussed by many but the discussion has not settled yet. In Bahrain, Bibby (1970) made a preliminary survey on a qunat and suggested a noteworthy process which may have happened in the technical development. The qanat which he observed was constructed in the sand deposit. The sand was of wind-blown one and the depth was 20 feet. The qanat consists of a miles long underground conduit and shafts for maintenance. He found the underground structure walled and roofed with slabs of stone as if the structure was furnished for the protection against the deposition of wind-blown sand. He detailed that the qanat was initially constructed on the naked ground surface as a simple water channel covered with slab roofs to eliminate evaporation loss. But later on, sand started encroachment on the channel, and counter measures were taken against it by walling and roofing the channel and building shafts for maintenance. Eventually the famous configuration of shaft and drift was established as the qunat structure.

of Egypt (Lloyd and Farag 1978). In spite of the scarcity of basic parameter, groundwater movement was estimated for South Oman and the result fell around several centimeters per day currently. The overall linear extent of the deep-borne flow ranges more than 700 km, so the residence time of water may amount in the range of 10,000 to 100,000 years. This figure stays within the period of glacial and inter-glacial cycle. Periodical fluctuation of climate is well known in these days and the fluctuation naturally proceeds in the long term variation of temperature, aridity and possibly wind strength in a certain region. The hydrogeological regime of palaeo-groundwater suggests that its long term rise and fall in water flux has been kept at a certain level without exhaustion. However, the recent human interference may cause disaster to this regime probably sustained for hundreds of thousand years.

According to the results of ^{14}C dating, the aquifer seems to comprise of some sets of flow zone. In the JICA study (1989) four zones were delineated (Fig. 8). These flow zones hold a large span of age variation from 4,000 years to 30,000 years. The zoned flow may reflect the difference of recharge in areas and times. When each zone is examined of its characteristics in stable isotope composition, the differentiation becomes more discrete. Scientific results demonstrate the diversity of deep-borne groundwater from many aspects, but it is a fact that great constraint exists against expediting the exploration because of the costly drilling. Notwithstanding such situation, still much effort should be spent to collect and integrate the scientific data to the maximum level in order to grasp the whole concept of the deep-borne groundwater. It should be stressed again that the scale of the groundwater system is tremendous in Arabia both in space and time. The scale is large enough to cope with the environmental subjects in the Holocene and in the Late Pleistocene at planetary level. In other words, study on the deep-borne groundwater may assume significant role in disclosing the facts in human evolution in Arabia at the later stage of the Quaternary.

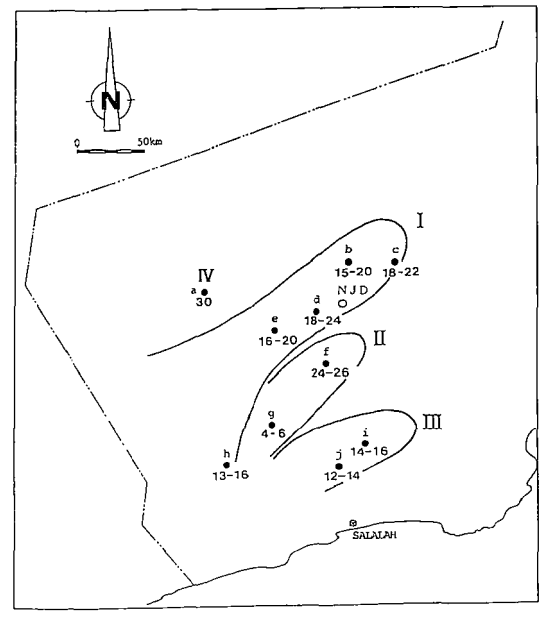

Fig. 8 Deep-borne groundwater flow zones in the Nejd of Dhofar, Oman (JICA 1989, supplemented by PAWR). ^{14}C dating (1,000 years unit) is indicated by Arabic numerals.

Hydro-environment: past and future

Owing to the modern achievement of science, we have known more than ever about the environmental evolution of our planet. Nowadays it is a well known fact that our planet has been in a long process of environmental change since it was created 4.5 billion years ago. Within this long period our knowledge of the past becomes the more and the better as the past concerned gets the nearer to the present. In terms of the human matter, the required period of environmental record can be two million years or so, and particularly intensive studies are currently in progress on the last glacial period , i.e., the last 100 thousand years approximately. The study results, obtained from the extensive field exploration and laboratory analysis, draw attention even from the research workers on the present environment. In parallel with the palaeo-environmental study in the field and laboratory, model formulation and simulation for the Earth's environment are challenged in order to understand the mechanism and acquire the projection of the present trend to the future.

There are various environmental elements to be clarified for understanding the past, but among them temperature record is actually the best for multiple application. For reconstructing thermal history

of the marine and terrestrial environment, core samples of the ocean bed sediment and continental ice sheet, i.e., glacier ice of the Antarctica and Greenland, are analyzed of an oxygen isotope species, ^{18}O, contained in the formation constituents. From the oceanic sediments a thermal record of one million years or more has been recovered. Ice sheet drillings are on-going projects at the several localities of polar ice. Ice cores of thousands of meters long may reproduce a more detailed record of the atmospheric environment, with an appreciable resolution of 10 years or less. I t may reveal the thermal history down to the glacial period preceding the last, i.e., hopefully ranging some 150 thousand years.

In the thermal record from the ocean bed sediments, there appeared a very clear periodicity of 100 thousand years, which becomes distinct during the last one million years and gets more apparent in the later 600 thousand years (Fig. 9) (Imbrie *et al.* 1984). The periodical thermal change of marine environment implies same synchronous change in the climate of the terrestrial part of the Earth. Thermal phenomena naturally accompany the hydrological and ecological ones. In the arid region the climate may have fluctuated accordingly, resulting in the shift of the physiographical condition.

Some interesting results were reported on the two ocean bed core samples retrieved from the Arabian Sea. Planktonological and palynological works confirmed the coincidence between the enhancement

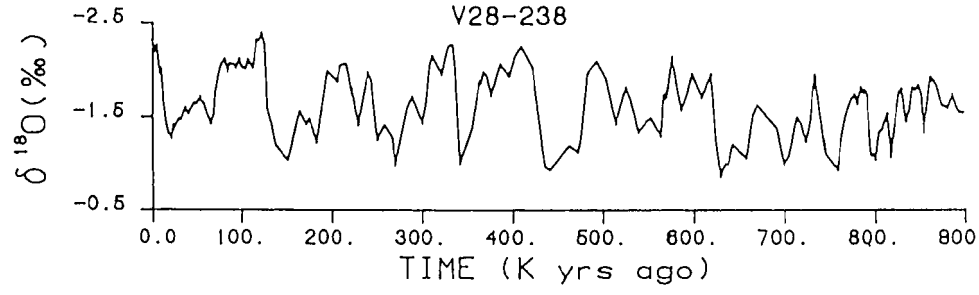

Fig. 9 Variations in $\delta\ ^{18}O$ plotted on the SPECMAP time scale in the deep-sea core, V28-238, retrieved from the West Pacific ocean floor (after Imbrie *et al.* 1984).

of the Southwesterly Indian Monsoon and the increase of vegetation on the nearby land area of Arabia. Such coincidence was observed several times during the inter-glacial period in both Holocene and Pleistocene; ; 10 thousand years B.P. in the former and 80, 100 and 120 thousand years B.P. for the latter (Prell and Van Campo 1986). In the inter-glacial period the southwesterly monsoon was presumably strengthened by the Tibetan anticyclonic system which developed due to the heating of the Tibetan Plateau (Yasunari 1987). As mentioned in the section of atmospheric water in this paper, even at present the Southwesterly Indian Monsoon provides precipitations along the coast of South Arabia, especially in the coastal mountain. The monsoon also causes the rainfall in the Oman Mountains further north of the southern Arabian coast.

According to computer simulations of the climate in Pleistocene, general climatic tendency was concluded as cold and dry in the glacial period (Gates 1976; Manabe and Hahn 1977). However, there were wet and cool periods in Pleistocene, designated by the large lacustrine deposits, the remains of palaeo-lake, inland of North Africa and Arabia. General extent of palaeo-lake distribution can be seen in Fig. 10. In the southwestern part of the Rub al-Khali Sands a mass of carbonate deposit were left in the Mundafan Basin. The ^{14}C dating of the carbonate gave three periods for the appearance of the lake; around 6,000 to 9,000 years B.P., from 21,000 to 30,000 years B.P. and the intermediate of the former two periods (McClure 1976). Similar pluvial periods were detected in southern Libya, in the province of Fezzan (Petit-Maire *et al.* 1980). A set of lacustrine deposits of a Quaternary lake was investigated on the dating of the shells. ^{14}C dating gave 22,700 to 26,100 years B.P. Th/U dating provided 90,000 years B.P. and 125,000 to 160,000 years B.P. The lacustrine deposits were of shore formation, so their distribution delineated a lake of ca. 100 km span in the east to west axis. In other neighbouring region,

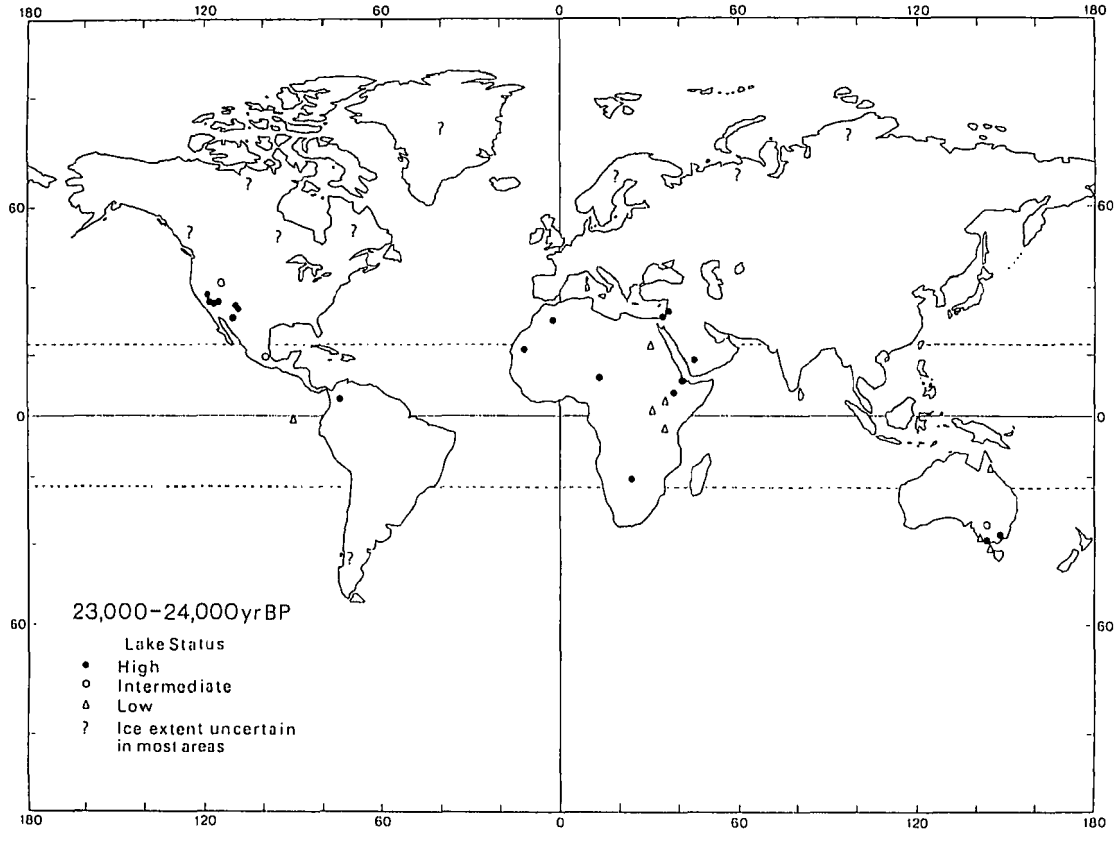

Fig. 10 World lake status in late Pleistocene (Alayne Street and Grove 1979).

the Sarir Tibesti and Gilf Kabir, ^{14}C dating of carbonate element of the lacustrine formation was ca. 5,000 years B.P. and 7,000 to 13,000 years B.P. (Pachur 1980). All these results comprise dating within the interval of cold glacial period, c.f., the Wurm period (ca. 10,000 to 100,000 years B.P.). These warm and cool pluvial periods were supposedly the periods of recharge to the deep-borne groundwater in Arabia.

In addition to the ancient lakes inland of Arabia, caves in the carbonate rocks of the Arabian mountains are the other important sites for palaeo-environmental study. Many karstic caves were known in the northern Arabia, particularly along the Mediterranean coast and in the zone continuing to Anatolia and Zagros. However, during 1980s more speleological sites were discovered in Southern Arabia by an American explorer. Late W. Donald Davison Jr., a former foreign expert of the Oman Government, and his wife carried out an intensive exploration of the mountain caves. Those caves were located in the remote area and previously almost inaccessible unless supported by airborne service. Reportedly the caves were first recognized from the air during the routine flights to the robot rain-gauges on the mountain. Among the explored caves, there is a surprisingly large one at 1,380 m above sea level, named Majlis Al Jinn (Meeting Room of the Spirits) by Davison. It was measured 120 m to the ceiling and 5.8 ha on the floor, and the total volume of the cave chamber was 4 million cubic meters (a cross-section is shown in Fig. 11) (Davison 1985). Those caves, represented by Majlis Al Jinn, are the proofs of the wet and green environment prevailed in the past, because formation of such karstic caves was only possible under the vital groundwater activity with dissolved bicarbonate supplied by the decomposition of rich vegetation. Davison was lost in Andes Mountains in 1995. It was a great loss to the scientific circle for exploratory works in Arabia.

The wet climate in the past replenished the deep-borne Arabian aquifers with a tremendous amount of water, the dating of which was successfully made and we have known even some chronological

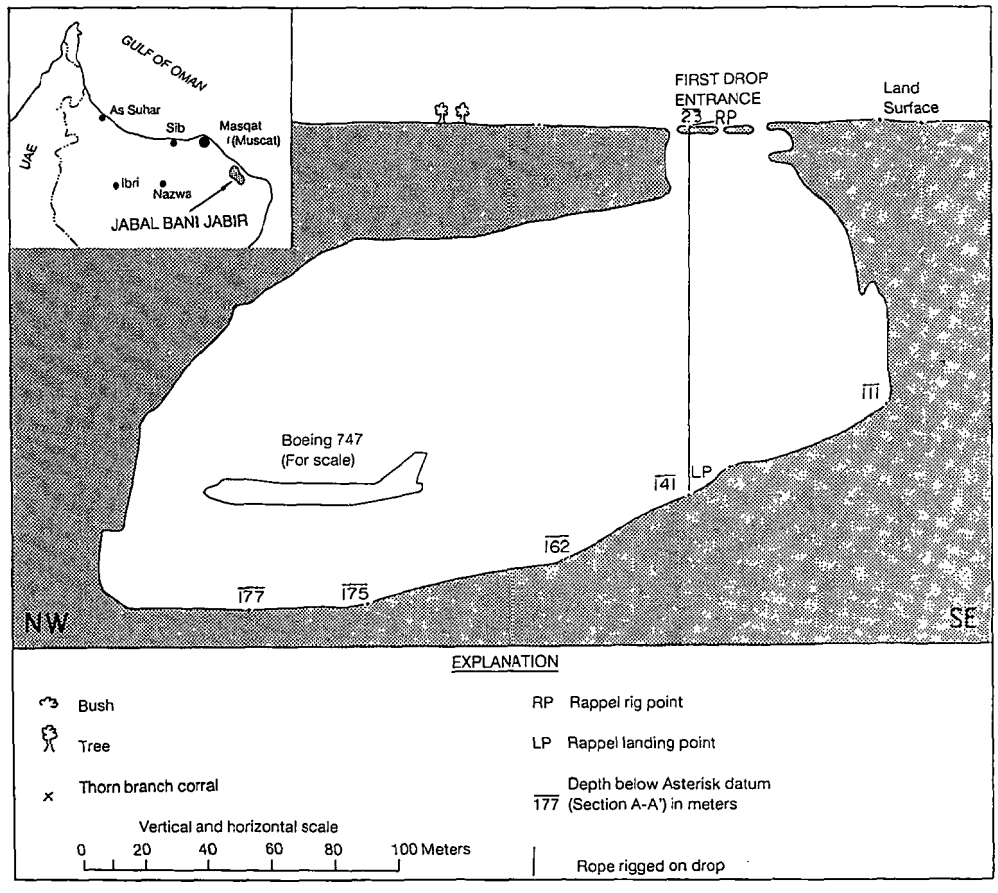

Fig. 11 Vertical cross-section of Majlis Al Jinn Cave, a karstic chamber, in Oman (Davison 1985).

details. The difference in the hydrological environment is also reflected in the isotopic composition of palaeo-groundwater. In general palaeo-groundwater assumes lower stable isotopic level which implies cooler or colder environment at the time of replenishment. In terms of $\delta\ ^{18}O$, it is around –11‰ in Western Desert of Egypt and –6.5‰ in Sinai Peninsular (Issar and Michaeli 1972). In South Arabia, –5.5‰ in average is dominant in Nejd (Wushiki 1991). When $\delta\ ^{18}O$ and δD are used in combination, differentiation of palaeo-groundwater from the modern one may become clearer.

Concerning the human action in the arid region on the environment of the ground surface, the intentional one in positive sense is well demonstrated in the Nabatean case. They modified the ground morphology in order to create productivity of the land and intervene the natural procedure of geographical and ecological evolution to a certain extent. However, such action is minor and most of the human action on the environment has been negative and tremendous as often accused from the various aspects. For instance, it is a fashion to attribute the ecological decline in the arid region to animal husbandry, although this human livelihood should be accounted for one of the greatest achievements of the civilization. The open field grazing of domesticated animals, particularly goats and sheep, destroyed vegetation and surface soil structure in the most part of the arid region, and triggered soil erosion to a irreversible level. Consequently, the effect caused large scale negative alteration of the ground surface infiltration throughout the nomadic region, the implication of which has been already explained earlier. The consequences are detectable visually in some hydrological sites. In many karstic areas wadis are apparently vital in fluvial action both in deposition and erosion, leaving fresh tract of such action beside the previously discharging zone of groundwater: karstic spring or cave. Nowadays karstic caves are completely dried up there, but the caves still show the scale of once prevailed discharge comparable to that of the present fluvial activity, suggesting that the groundwater system were deprived of surface infiltration greatly due

to the alteration of ground surface, i.e., deteriorated vegetation, in the recharging zone. Instead, the surface fluvials gained water share, reflecting remarkable vitalization in the wadi activities, often apparent as stated above.

Recently mankind got aware of their negative action to the environment, and set up counter-action to remedy the results. Application of water harvesting is unprecedentedly promoted in practice for the recovery of vegetation in the desertification[7] inflicted area. The application is extended even further into the region where people expect some sort of reclamation, or new exploitation of land productivity. This trend may bring the vast area of the arid region to the quite different geo-physiological condition some day in the future.

Before concluding this section, an attempt shall be made for projecting the hydro-environment of Arabia to the future. Due to the increasing anthropogenic effects, the global environment is changing unprecedentedly, overall warming of the surface environment is predicted because of the steady increase of greenhouse-effect gas; carbon dioxide, methane, etc. As one of the unique outcomes resulted from the global warming, Southwesterly Indian Monsoon will be strengthened along the southeast coast of the Arabian Peninsular by the reinforced anti-cyclonic pressure system on the Tibetan Plateau (Yasunari 1987). Consequently summer precipitation may increase in the coastal zone, but far into North Africa aridity may result more due to the enhancement of subsiding air mass driven by the easterly jet from Tibet. However, southeast coast of the Peninsular may enjoy cooler environment in contrast with the rest of Arabia where warming predominates. This privilege is totally due to the incidental effect in which the strengthened southwesterly monsoon will draw out more upwelling water from the cold abyss of the Arabian Sea. Nevertheless the surface environment of the Indian Ocean will be heated up, and coastal cooling mentioned above may constitute only a minor and exceptional part in the general trend (Center for Global Environmental Research 1996). Overall heating will happen in the most part of oceanic surface, so cyclones may be generated more in the Indian Ocean. It is liable that occasions of cyclone's landing on South Arabia may become frequent. Large rivers in the world are found to have already responded the global warming with increased discharge (Probst and Tardy 1989). This trend can be explained as a due aspect of the hydrologic cycle, for such an increase results from the physico-chemical properties of the atmosphere which raise its saturation capacity of water vapour in response to the increase of temperature. River Nile, the Tigris and the Eufrates are all flowing through the Arabian and North African arid land, and the aridity in the region is anticipated to get worsening in the course of the global warming. However, the discharge of the three rivers may increase when the recharge increases in their heads deployed outside the arid region. All these presumed aspects should get integrated to a single picture of the environment. But a hard task lies ahead on how to manage the anthropogenic factors, the significant part of which is the consumption of energy source. And this problem is deeply rooted in Arabia where the largest energy source, petroleum, is produced.

Conclusion

Arabia and North Africa are located in a large geological and geographical unit, and the major part of the area is occupied by the arid region.

The region covers an extensive stretch of land from the Atlantic coast of North Africa to the South Arabian shore of the Indian Ocean. The coverage is vast, so the region is eventually surrounded by several large atmospheric systems: On the northern margin, middle-latitude westerlies prevail, while on

7) The word "Desertification" is often understood by the general public as a critical situation in the nature, where tremendous sand desert advances to well vegetated region and buries everything under the sand. But the real hazard happened in a different way, and the scientific definition of "Desertification", proposed in 1977 by the United Nations Conference on Desertification (UNCOD), is as follows (Mainguet 1991): "Desertification is the diminution or destruction of the biological potential of the land, and can lead ultimately to desert-like conditions. It is an aspect of the widespread deterioration of ecosystems, and has diminished or destroyed the biological potential, i.e., plant and animal production, for multiple use purposes at a time when increased productivity is needed to support growing populations in quest of development".

the southern and the eastern fringes the Inter-Tropical Convergence Zone (ITCZ) and the Indian Ocean Monsoon are dominant, respectively. These systems repeat seasonal advance and retreat to the arid core of the region.

In a geological sense of time, the global environment has proceeded oscillatory fluctuation both temporal and spatial in the Quaternary Period. As the global cooling and heating went on, the hydrological system kept up with them, reflecting on the rise and fall of the intensity of hydrological cycle. Remains of major wet episode of the past climate are left intact in the remote quarters of the desolated land. Access to the once difficult sites were drastically improved by the adoption of modern technology. As the modern exploration was intensified, ancient hydrological amelioration was disclosed increasingly through the discoveries in the region.

Enormous storage of deep-borne palaeo-groundwater is the legacy of the previous pluvial period, a phase of the climatic fluctuation of the Quaternary. Oasis is a mid-desert miracle and the origin of its water is often clarified as from the deep source. In the 100,000 year long climatic change palaeo-groundwater could be an emergency water in the natural reservoir which sometimes saves lives in the desert to the next promised period of better environment.

Arabia witnessed some human success in the struggle for their existence in the hostile arid ambience. Indigenous hydraulic techniques have been wrought out in order to overcome the natural hardness, i.e., the aridity. Nowadays, technical innovation borrowed from the foreign region has provided a temporary recess for the struggle which was fought incessantly till the recent past. However, people in the same region may face a new environmental problem which has been caused anthropogenically and is growing steadily in global scale. They have to manage dual challenges, working for the development in their old but unfriendly environment on one side and striving to protect them against the predicted danger newly generated by the modern industry on the other. Nevertheless, they have to be clever enough to bring their feeble but precious hydrological system into the most benefitial use without spoiling and exhausting.

Acknowledgements

The author would like to thank the editorial board of this special publication for inviting him to join the contribution. This opportunity eventually makes him to recall the day when he visited Professor Fujii's base camp in Karbala for the first time. It was a hot and dusty evening in May and he made a long walk from the Bab al-Baghdad, the city gate in the north, to the Hai al-Hussaini. The Hai al-Hussaini was a newly developed residential quarter at the south end of the Imam Hussain's city. The house was located at the very end of the residential area, so there was nothing but "hamad" (desert) beyond it. When he approached the house, guided by a local boy, he recognized a short-statured but robust man spraying water on the plants around the house wall. The man, with disturbed hair on the head, was standing in the dusk against still bright evening sky. Professor Fujii was clad white in traditional *suteteko* style, a typical summer wear in Japan.

Next day he took the author to Al-Tar caves and Abu Dibbis depression. He led the author unexpectedly inside a cave and took him around the labyrinth, making him embarrassed by expressing the imagination and passion in the dark. To tell frankly, the author did not anticipate to visit Al-Tar again, let alone to join the team for three seasons and to keep intimacy to the present.

In dealing with Professor Fujii's expedition, the author was supported by many senior scholars and friends. Among them, Late Professor S. Matsuo of Tokyo Institute of Technology and Professor M. Kusakabe of Okayama University were the closely cooperating geochemists. He is indebted greatly to them in building his research theme induced by the expedition.

The exciting and stimulating days in the early period of the expedition will never be forgotten together with then young team members: K. Matsumoto, T. Kawana, T. Takemura, H. Ii, Y. Okada, M. Kawamata and others.

Iraqi colleagues are also unforgettable, but Salah al-Din already passed away in the plight of his Motherland. Falah and Razaq are the two always remembered with Hassan, our cook..

Almost a quarter century has passed since then, but the author can still recall many essential outcomes generated by the encounter with Professor Fujii on that hot evening of Karbala. He acknowledges Professor Fujii with thanks for all the irreplaceable and valuable memory in Iraq which both shared together.

He wishes Professor Fujii another opportunity of academic excitement in Iraq. The day of restoration of Iraq should come soon with peace.

References

Alayne Street, F. and A. T. Grove
1979 Global maps of lake-level fluctuation since 30,000 yr B. P., *Quaternary Research*, 12, pp. 83–118.

Alsinawi, S.
1972 The Prospects of the seismological research in Iraq, *Proceedings of First Scientific Conference on National Research Foundation of Iraq*.

Ambroggi, R. P.
1966 Water under the Sahara, *Scientific American*, 214, 5, pp. 21–29.

Baertschi, P.
1976 Absolute ^{18}O content of Standard Mean Ocean Water, *Earth and Planet. Sci. Lett.*, 31, pp. 341–344.

Bibby, G.
1970 *Looking for Dilmun*, Collins, London, 410 p.

Burdon, D. J.
1977 Flow of fossil groundwater, *Q. J. Eng. Geol. London*, 10, pp. 97–124.

Center for Global Environmental Research
1996 Data book of sea-level rise, *CGER-report*, ISSN 1341–4356, CGER-D009-'96, Environment Agency of Japan, 88 p.

Clark, I. D., P. Fritz, O. P. Quinn, P. W. Rippon, H. Nash and Sayyid Barghash bin Ghalib Al Said
1987 Modern and fossil groundwater in an arid environment: A look at the hydrogeology of Southern Oman, "Isotopic technique in water resources development", IAEA, Vienna, pp. 167–187.

Craig, H.
1961a Isotopic variations in meteoric waters, *Science*, 133, pp. 1702–1703.
1961b Standard for reporting concentrations of deuterium and oxygen-18 in natural waters, *Science*, 133, pp. 1833–1834.

Craig, H., I. Gordon and Y. Horibe
1963 Isotope exchange effects in the evaporation of water, 1. Low temperature experimental results, *Journ. Geophys. Res.*, 68, 17, pp. 5079–5087.

Critchley, W. and K. Siegert
1991 *Water harvesting, AGL/MISC/17/91*, FAO, Rome.

Dansgaard, W.
1964 Stable isotopes in Precipitation, *Tellus*, 16, 4, pp. 436–468.

Davison, W. D. Jr.
1985 *Majlis Al Jinn Cave, Sultanate of Oman*, Public Authority for Water Resources, Sultanate of Oman, *PAWR Report*, PAWR 85–20, 16 p.

Duvdevani, S.
1947 An optical method of dew estimation, *Quart. J. of the Roy. Met. Soc.*, 73, pp. 282–296.

Evenary, M. and D. Koller
1956 Ancient master of the desert, *Scientific American*, 194, 4, pp. 39–45.

Evenary, M., L. Shanan, N. Tadmor and Y. Aharoni
1961 Ancient agriculture in the Negev, *Science*, 133, 3457, pp. 979–996.

Gat, J.
1966 *The isotopic composition of atmospheric waters in the Mediterranean Sea area and their interpretation in terms of air-sea interactions*, The 20th Congress of Comité International de l'Exploration Scientifique de la Mer Méditerranée, Bucharest.

Gates, W. L.
1976 Modeling the Ice-age climate, *Science*, 191, pp. 1138–1144.

George, A.
1982 Floods devastate Yemen agriculture, *Middle East Agribusiness*, 2, p. 4.

Hagemann, R., G. Nief and E. Roth
1970 Absolute isotopic scale for deuterium analysis of natural waters. Absolute D/H ratio for SMOW, *Tellus*, 22, pp.712–715.

Higuchi, K. and H. Wushiki
1970 Observations of pre-activated ice nuclei in the atmosphere at subzero temperature, *Journ. Met. Soc. Japan*, 48, 3, pp. 250–254.

Imbrie, J., J. D. Hays, D.G. Martinson, A. McIntyre, A. C. Mix, J. J. Morley, N. G. Pisias, W. L. Prell and N. J. Shackleton
1984 The orbital theory of Pleistocene climate: Support from a revised chronology of the marine $\delta\ ^{18}O$ record, "Milankovitch and climate", *NATO ASI Series, Series C: Mathematical and physical sciences*, 126, pp. 269–305.

Issar, A., A. Bein and A. Michaeli
1972 On the ancient water of the upper Nubian sandstone aquifer in Central Sinai and Southern Israel, *Journ. Hydrol.*, 17, pp. 353–374.

JICA
1989 *Sultanate of Oman, the study on agriculture development project in the Nejd area*, Japan International Cooperation Agency (JICA).

Katsnelson, J.
1964 The variability of annual precipitation in Palestine, *Archiv für Meteorologie, Geophysik und Bioclimatologie*, Series B, 13, 2 Heft, pp. 163–172.

Kedar, Y.
1957 Water and soil from desert; some ancient agricultural achievements in the Central Negev, *Geogr. J.*, 123, pp. 179–187.

Konishi, M.
1970 Climatological and hydrological approach to the destinies of Indus Civilization (I) (in Japanese), *Water Science*, 14, 1, pp. 71–90.

Kutschera, C.
1982 South Yemen counts the cost of flooding, *The Middle East*, July, pp. 51.

Lloyd, J. W. and M. H. Farag
1978 Fossil groundwater gradients in arid regional sedimentary basins, *Ground Water*, 16, 6, pp. 388–393.

Mainguet, M.
1991 *Desertification-Natural background and human mismanagement*, Springer-Verlag, New York, 306 p.

Majoube, M.
1971 Fractionnement en oxygène 18 et deutérium entre l'eau et sa vapeur, *J. Chim. Phys. Physico-Chim. Biol.*, 68, 10, pp. 1423–1436.

Manabe, S. and D. G. Hahn
1977 Simulation of the tropical climate of an Ice Age, *Journ. Geophys. Res.*, 82, 27, pp. 3889–3911.

McClure, H. A.
1976 Radiocarbon chronology of late Quaternary lakes in the Arabian desert, *Nature*, 263, pp. 755–756.

Otkun, G.
1972 Observations on Mesozoic sandstone aquifers in Saudi Arabia, *Proceedings of 24th IGC*, Section 11, pp. 28–35.

Pachur, H.-J.
1980 Climatic history in the late Quaternary in Southern Libya and the Western Libyan Desert, *The Geology of Libya*, 3, pp. 781–788.

Pallas, P.
1980 Water resources of the People's Libyan Arab Jamahiria, *The Geology of Libya*, 2, pp. 539–594.

Parker, D. H.
1985 *The hydrology of the Cainozoic aquifers in the PDO concession area, Sultanate of Oman, Vol. 1*, PDO report.

Peixoto, P. J.
1970 Pole to pole divergence of water vapor, *Tellus*, 22, 1, p. 23.

Petit-Maire, N., L. Casta, G. Delibrias and Ch. Gaven with an appendix by A.-M. Testud
1980 Preliminary data on Quaternary palaeolacustrine deposits in the Wadi ash-Shati' Area, Libya, *The Geology of Libya*, 3, pp. 797–807.

Prell, W. L. and E. Van Campo
1986 Coherent response of Arabian Sea upwelling and pollen transport to late Quaternary monsoonal winds, *Nature*, 323, pp. 526–528.

Probst, J. -L. and Y. Tardy
1989 Global runoff fluctuations during the last 80 years in relation to world temperature change, *American Journ. Sci.*, 289, pp. 267–285.

Reij, C., et al.
1988 *Water harvesting for plant production, Vol. 1, World Bank Technical Paper*, No.91.

Rochette, R. M.
1989 *Le Sahel en lutte contre la desertification*, W. J. Margraf, Weikersheim, Germany, 657 p.

Rossby, C. -G.
1941 The scientific basis of modern meteorology. In: *Climate and man* (United States Department of Agriculture Yearbook), Washington D. C., pp. 599–655.

Schaeffer, V. J.
1948 The production of clouds containing supercooled water droplets or ice crystals under laboratory conditions, *Bull. Amer. Met. Soc.*, 29, 175–182.

Thesiger, W.
1959 *Arabian sands*, Longmans, Green and Co., London, 347 p.

Toba, Y.
1966 On the giant sea salt particles in the Atmosphere, III An estimate of the production and distribution over the world ocean, *Tellus*, 18, 1, pp. 132–145.

Wushiki, H.
1971 Sea salt particles in Jerusalem, *Studies of the Microphysical Aspects of Cloud Processes Leading to the Formation of Precipitation, Collected Papers*, Report No.4, the Hebrew Univ. of Jerusalem, Dept. of Meteorology, Cloud and Rain Physics Laboratory, pp. 1–19.
1991 $^{18}O/^{16}O$ and D/H of the meteoric waters in South Arabia, *Mass Spectroscopy*, 39, 5, pp. 239–250.

Wushiki, H. and M. Kusakabe
1981 Isotope hydrology of oases in the Abu Dibbis Depression, Iraq, *Verh. Internat. Verein. Limnol.*, 21, pp. 125–129.

Yasunari, T.
1987 Himaraya zozan to monsun wo meguru sho mondai (On the Himalayan orogeny and establishment of monsoon system.) (in Japanese), *Gekkan Chikyu*, 9, 12, pp. 685–690.

PHYLETIC STATUS OF *KENYAPITHECUS*

Hidemi ISHIDA*

Introduction

The purpose of this paper is to discuss the phyletic status of *Kenyapithecus*, especially as a genus of non-hominid hominoids, using the material which have been discovered from Nachola by the Japan-Kenya Joint Palaeoanthropological Expedition to Northern Kenya directed by the author (Ishida 1984).

For more than a quarter of the century since the beginning of 1960s, Simons' proposal (1961; Simons and Pilbeam 1965) that *Ramapithecus* (Lewis 1934) and *Kenyapithecus* (Leakey 1962) might have been the earliest hominids has been believed by many physical anthropologists. With development of molecular taxonomy and increasing number of additional fossils, however, their hominid status has become doubtful. Even Pilbeam who supported Simons' proposal has changed his opinion after new discoveries (Pilbeam 1986) of *Ramapithecus* from Siwalik, Pakistan. These new discoveries have revealed that the face of *Ramapithecus* was much similar to that of orangutans. He suggested that *Ramapithecus* should be a synonym of *Sivapithecus*, which he placed in an ancestral position of a Pleistocene giganticapes, *Gigantopithecus*, and modern orangutans.

Walker and Andrews (1973) have thrown doubt on the hominid status of *Kenyapithecus* by reassessment of the reconstruction of its dental arcade based on a newly discovered mandible from Fort Ternan, Kenya.

In this paper, the phyletic status of *Kenyapithecus* will be discussed on the basis of sexual dimorphism in canine size, morphology of the dental arcade, and foot bones from Nachola.

Nachola area and the dates of the sediments

Our research field in northern Kenya is located on the eastern side of the Rift Valley (Fig. 1). The nearby town is called Baragoi, and is ca. 350 km north of Nairobi. The field is divided into two areas by geological age. One of them is the Nachola area of the middle Miocene, and the other is the Samburu Hills of the late Miocene. The Nachola area lies 15 km west of Baragoi. Several hundred fossils of *Kenyapithecus* have been recovered from the Nachola area since 1982. The Samburu Hills is located between Nachola and the Rift Valley, from which a large hominoid is known.

The Neogene System in and around the Samburu Hills, Northern Kenya, is divided into seven main formations on the basis of stratigraphy and geochronology (Fig. 2). In ascending order, they are the Nachola, Aka Aiteputh, Namurungule, Nanyangaten, Kongia, Nagubarat and Tirr Tirr Formations (Sawada *et al.* 1988).

The Nachola Formation, which is widely distributed along the Baragoi River, is the lowest part of the Neogene System, either unconformably overlying the Precambrian Basement Complex or being in fault contact with it. The Aka Aiteputh Formation conformably overlies the Nachola Formation and occurs in Nachola and the Samburu Hills. The Namurungule Formation covers the Aka Aiteputh Formation. And, the Nanyangaten Formation unconformably overlies the Nachola and Aka Aiteputh Formations.

Kenyapithecus occurs in the Aka Aiteputh Formation at Site BG-X in Nachola (Ishida 1984). The beds bearing *Kenyapithecus* fossils were accumulated between 15.4 Ma and 12.8 Ma, according to K-Ar

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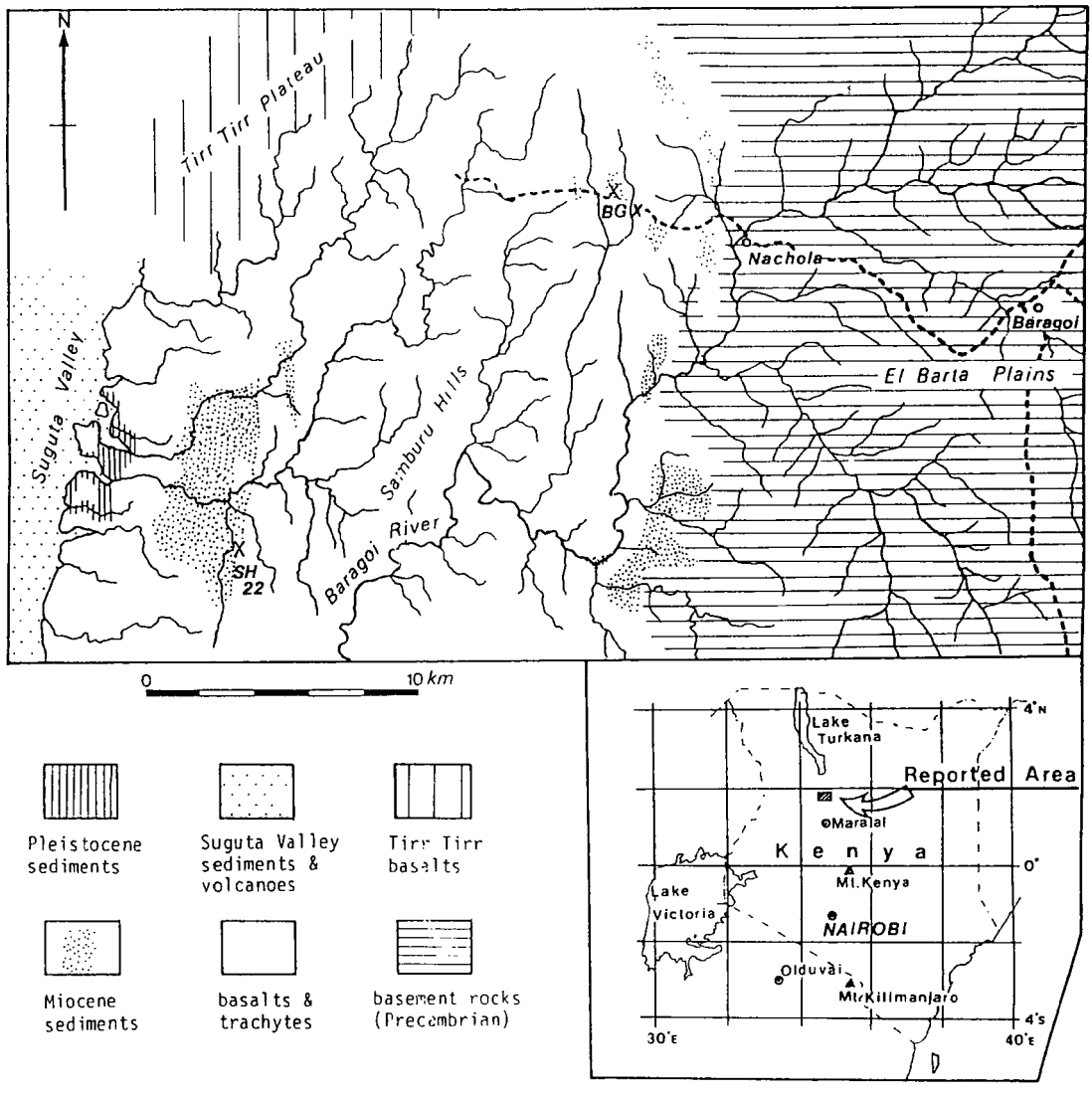

Fig. 1 Index map and simplified geological map of the Nachola area and Samburu Hills, Northern Kenya.

dating of volcanic rocks (Itaya and Sawada 1988).

Sexual dimorphism of the canine sizes

Simons and Pilbeam (1965) placed *Ramapithecus* and *Kenyapithecus* in hominids on the bases of their small canine size, thick enameled cheek teeth, and parabolic dental arcades. In this section, canine size is analyzed from a viewpoint of sexual dimorphism.

Our knowledge of sexual dimorphism in fossil hominoids is still quite limited, although it is essential for classification and taxonomy. Until recently, not numerous specimens of *Kenyapithecus* have been available; only a few canines have been available so far for the analysis of sexual dimorphism. Our expedition team, however, has discovered 32 canines of *Kenyapithecus* from the Aka Aitheputh Formation in Nachola. These new discoveries have made it possible to statistically analyze the sexual dimorphism of the genus (Ishida *et al.* 1991). As is shown in Figs. 3 and 4, the Nachola canines are clearly clustered into two groups. The larger canines are higher-crowned and more robustly-built, while the smaller ones are lower-crowned and more gracile. We inferred that they are males and females, respectively. This suggests that *Kenyapithecus* had a marked degree of sexual dimorphism. The smaller upper canines from Nachola are similar in size and morphology to the small upper canine of *K. wickeri* (KNM-FT46b),

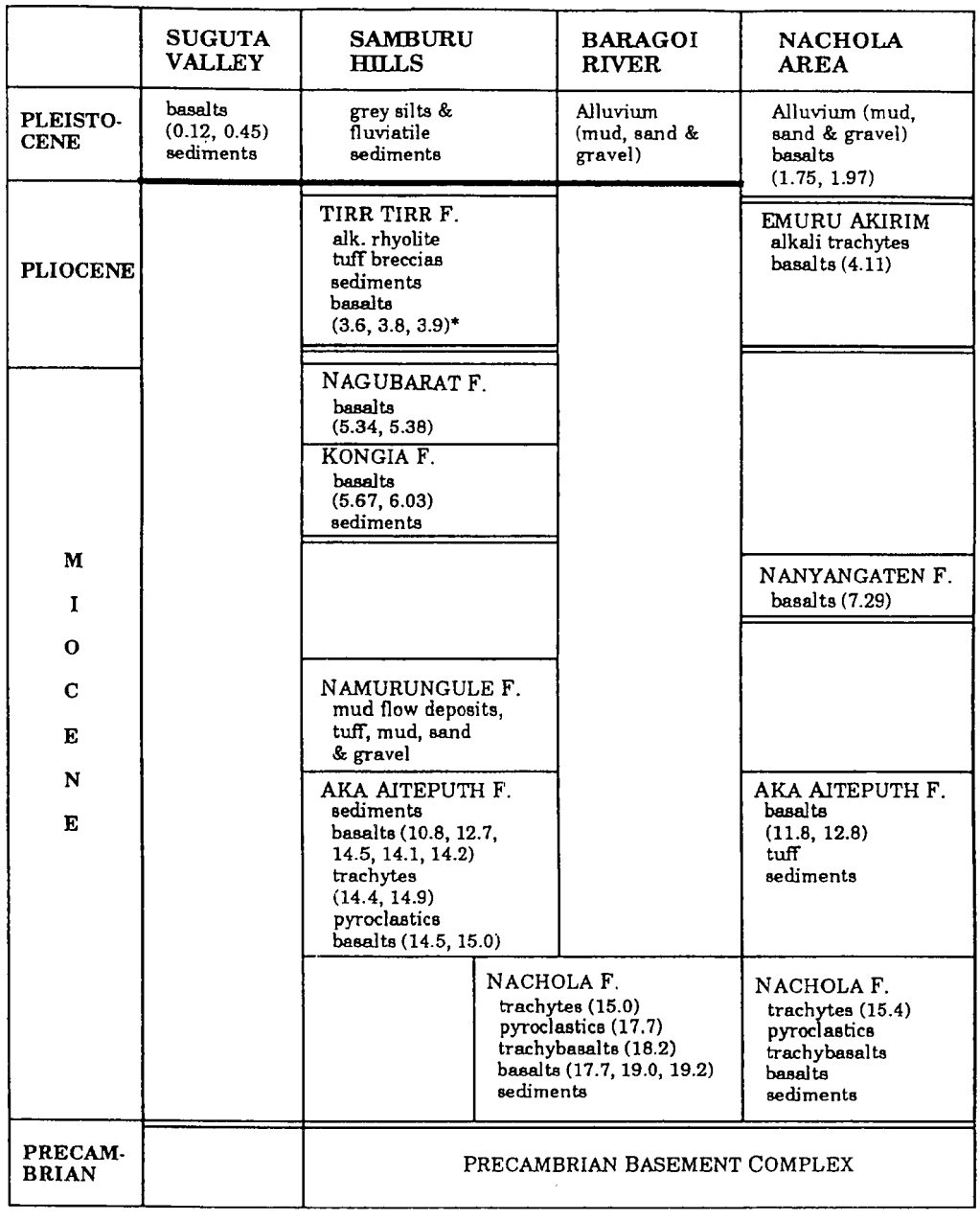

Fig. 2 Stratigraphy of the Nachola area and Samburu Hills. Numbers show K-Ar ages (Ma) (Sawada *et al.* 1988).

which was originally taken as evidence for the hominid status of *Kenyapithecus*. In addition, a large upper canine (KNM-FT39) and a large lower canine (KNM-FT28) in the Fort Ternan sample belong more probably to *K. wickeri* than to *Proconsul* (Pickford 1985). It is suggested, therefore, that the small canine of *K. wickeri* belong to a female individual (Fig. 5) and that *Kenyapithecus* is not a member of hominids.

Dental arcade

Pilgrim (1910) and Lewis (1934) suggested hominid characters in *Ramapithecus*. Especially, the latter author emphasized the parabolic dental arcade, and short and broad palate in his reconstruction of the maxillary morphology of *R. punjabicus*. Nearly 30 years later, a similar attempt for *Kenyapithecus*

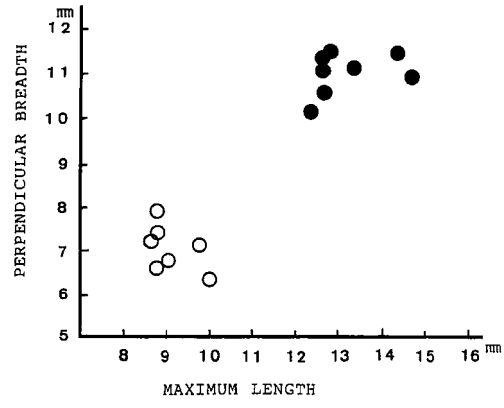

Fig. 3 Bivariate plots of *Kenyapithecus* maxillary canine specimens.

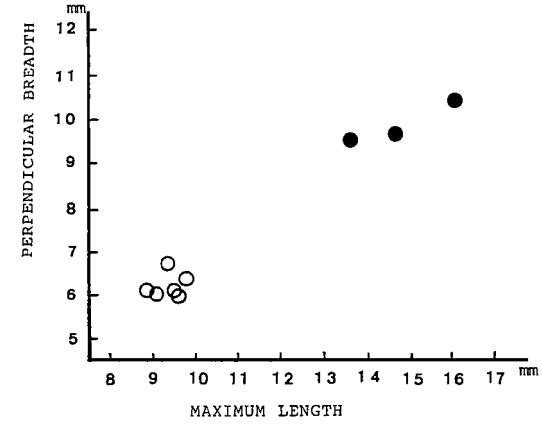

Fig. 4 Bivariate plots of *Kenyapithecus* mandibular canine specimens.

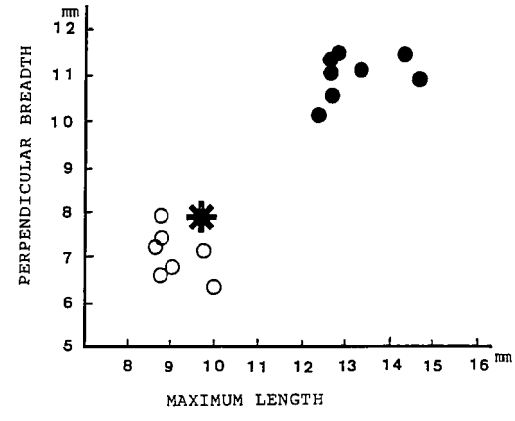

Fig. 5 Comparison of a maxillary canine (✱) of *Kenyapithecus wickeri* from Fort Ternan and those of Nachola's *Kenyapithecus*.

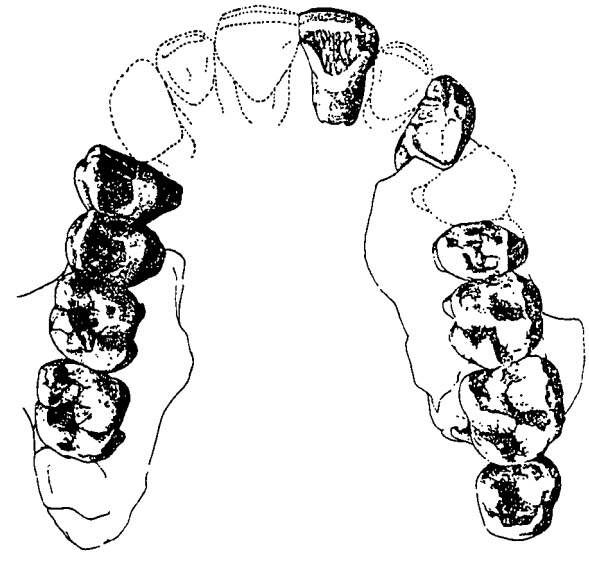

Fig. 6 Parabolic dental arcade of *Ramapithecus* reconstructed by Simons (Simons and Pilbeam 1965).

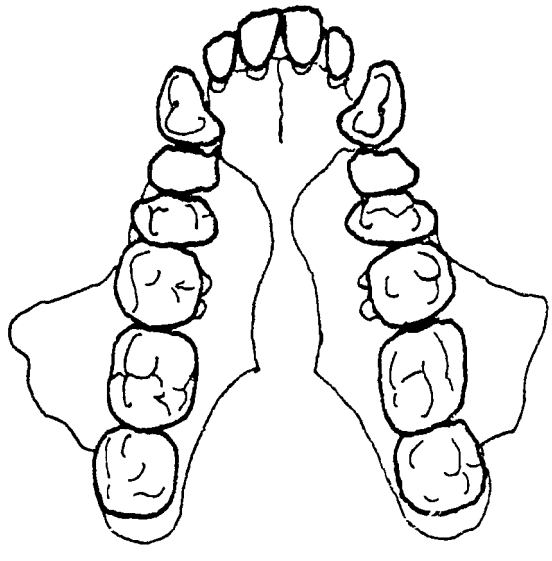

Fig. 7 Dental arcade of *Kenyapithecus* reconstructed by Walker and Andrews (1973).

wickeri was carried out by Simons and Pilbeam with maxillary fragments from Fort Ternan (KNM-FT46 and FT47: Simon and Pilbeam 1965; Simons 1969; Pilbeam 1969). As shown in Fig. 6, the dental arcade is parabolic, and the palate is short and broad in their reconstruction. They believed that *K. wickeri* had gnathic characters of hominids. The hominid status of *Kenyapithecus* proposed by Simons and Pilbeam (1965) is partly based on such gnathic characters.

On the other hand, some anthropologists (Genet-Varcin 1969; Vogel 1973; Walker and Andrews 1973) doubted accuracy of their reconstruction because the midline of the plate is missing. In 1973, Walker and Andrews reassessed the reconstructed dental arcade of *K. wickeri* with a new mandibular specimen described by Andrews (1971). They adjusted the placement of the maxillary fragments (KNM-FT46 and 47) with the new mandible which preserved the midline of the symphysis. As shown in Fig. 7, the new reconstruction suggests that *K. wickeri* has straight and elongated tooth rows, and narrow and long palate. This indicates a non-hominid condition for this species.

From Nachola, maxillary fragments of *Kenyapithecus* have been discovered. We have tried to reconstruct the dental arcade with the mirror image of a well-preserved maxillary specimen (KNM-BG14700) and isolated incisors as seen in Figs. 8 and 9. Both of the maxilla and incisors are inferred to belong to male individuals. It is very difficult to reconstruct a parabolic arcade for the Nachola sample. It is supposed that the tooth rows of *Kenyapithecus* from Nachola may have been straight and elongated, and palate long and narrow as in apes. Consequently, the evidence from Nachola also denies the hominid status of *Kenyapithecus*.

Morphology of foot bones

Hominids are distinguished from pongids by postcranial adaptations for their unique locomotor pattern (habitual bipedalism). In Nachola, 29 postcranial bones have been discovered from the Aka Aiteputh Formation, which also has yielded a number of isolated teeth and jaw fragments. There are two foot bones among the Nachola sample, a right talus (KNM-BG15529: Fig. 10) and a right calcaneus (KNM-BG17805: Fig. 11).

The talus is an eroded right trochlea, approximately 2 cm long proximodistally. The head and the most of the neck are missing. In size, this talus is similar to male *Papio* tali. The trochlea surface is somewhat lower on the medial side than on the lateral side and the trochlear groove is moderately



Fig. 8 Mirror image of upper jaw of *Kenyapithecus* from Nachola.

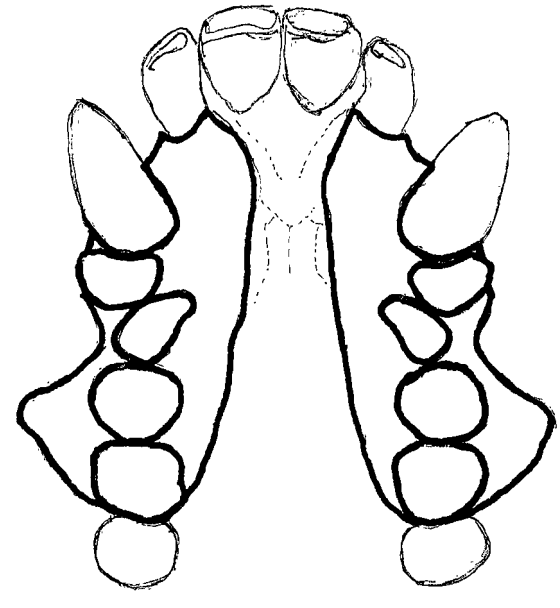

Fig. 9 Dental arcade of *Kenyapithecus* from Nachola reconstructed by Ishida.

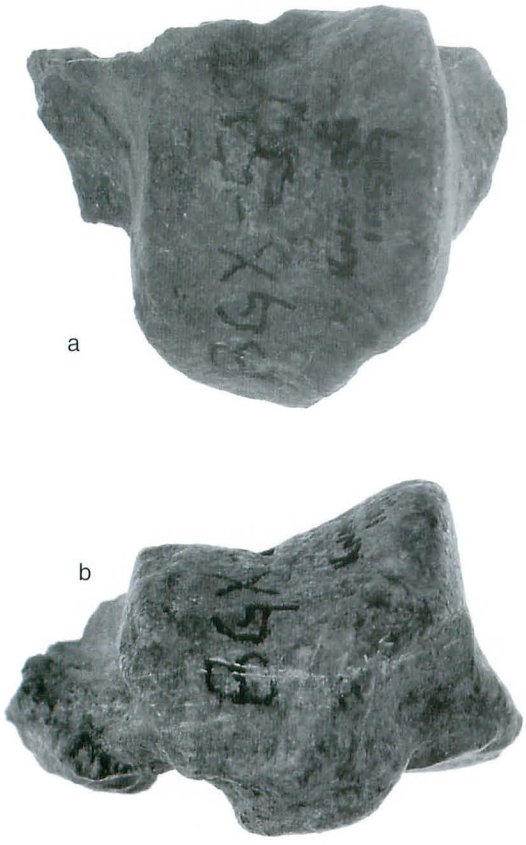

Fig. 10 Talus of *Kenyapithecus* from Nachola.
a: dorsal view. b: posterior view.

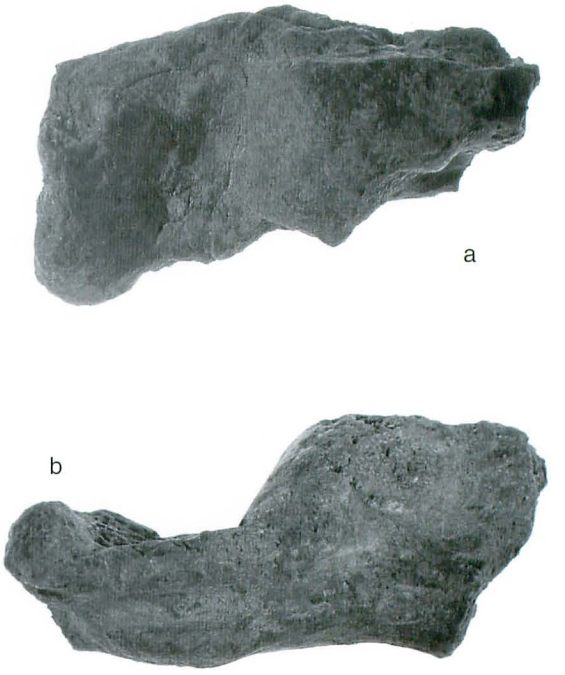

Fig. 11 Calcaneus of *Kenyapithecus* from Nachola.
a: dorsal view. b: medial view.

developed. While talar morphology in these taxa is not closely similar to that of any particular extant taxon, there are eclectic similarities to the tali of large bodied platyrrhines and hominoids. It indicates function in the ankle region that is not as constrained as in cercopithecids or in specialized leaping primates tali of other.

The calcaneus is approximately 4 cm long, lacking the proximal part of the heel process and the sustentaculum tali. An expanded medial process of the heel tuberosity is a characteristic feature of arboreal primates that use the intrinsic flexors, independent of the extrinsic musculature, in order to produce the adept grasping with the toes. This function is important during various orthograde arboreal activities such as climbing and clambering.

In both the talus and the calcaneus, the morphological characterisitcs are adaptive for arboreal quadrupedalism, and not for bipedalism.

Conclusion

To make clear the phyletic status of *Kenyapithecus* as non-hominid hominoids, sexual dimorphism of canine size and morphology of dental arcades of maxillae and foot bones, tali and calcanei, have been analyzed and discussed. It is concluded that *Kenyapithecus*, one of the middle Miocene homioid genera, is no longer regarded as hominid because of their large male canines, straight and elongated dental arcades, and foot bones not adapted to habitual bipedalism.

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References

Andrews, P.
1971 *Ramapithecus wickeri* mandible from Fort Ternan. *Nature* 231: 192–194.

Genet-Varcin, E.
1969 *A la Recherche du Primate Ancestre de l'Homme*. Paris: Boubee et Cie.

Ishida, H.
1984 Outline of 1982 survey in Samburu Hills and Nachola area, northern Kenya. *African Study Monograph. Supplemental Issue* 2: 1–13.

Ishida, H., Mbua, E., Nakano, Y. and Yasui, K.
1991 Sexual dimorphism in canine size of *Kenyapithecus* from Nachola, Northern Kenya. In: *Primatology Today*. Tokyo.

Itaya, T. and Sawada, Y.
1988 Geology of the Neogene system in and around the Samburu Hills, northern Kenya. *African Study Monograph. Supplemental Issue* 5.

Leakey, L.S.B.
1962 A new lower Pliocene fossil Primate from Kenya. *Annal and Magazine of Natural History ser.* 13 (4): 689–697.

Lewis, G.E.
1934 Preliminary notice of new man-like apes from India. *American Journal of Science* 27: 161–179.

Pickford, M.
1985 A New Look of *Kenyapithecus* based on Recent Discoveries in Western Kenya. *Journal of Human Evolution* 14: 113–143.

Pilbeam, D.R.
1969 Tertiary Pongidae of East Africa: Evolutionary relationships and taxonomy. *Peabody Museum Bulletin* 31: 1–185.
1986 Distingushed lecture : hominoid evolution and hominid origin. *American Anthropologist* 88: 295–312.

Pilgrim, G.E.
1910 Notices of new mammalian genera and species from the Tertiaries of India. *Reconnaissance of Geological Survey of India* 40: 63–71.

Sawada, Y., Tateishi, M. and Ishida, S.
1988 Geology of the Neogene system in and around the Samburu Hills, northern Kenya. *African Study Monograph. Supplemental Issue* 5.

Simons, E.L.
1961 The phyletic position of *Ramapithecus*. *Postilla* 57: 1–9.
1969 The Late Miocene hominid from Fort Ternan, Kenya. *Nature* 221: 448–451.

Simons, E.L. and Pilbeam, D.R.
1965 Preliminary revision of the *Dryopithecus* (Pongidae, Anthropoidea). *Folia Plimatology* 3: 81–152.

Vogel, C.
1973 Remarks on the reconstruction of the dental arcades of *Ramapithecus*. *Paper delivered in the IXth International Congress in Anthroplogical and Ethnological Sciences 0227*: 1–22.

Walker, A. and Andrews, P.
1973 Reconstruction of the dental arcades of *Ramapithecus wickeri*. *Nature* 244: 313–314.

THE GODS FROM NEMRIK

Stefan Karol KOZLOWSKI*

The collection of more than 20 zoo- and anthropomorphic stone sculptures from Nemrik (Iraq) is already enjoying international fame. Perhaps the most eminent specimen—a bird head rendition in limestone—published along with a few others by S. K. Kozlowski and A. Kempisty (1990), has since been reproduced by J. Cauvin, M. Roaf, A. Invernizzi and J. Huot, among others.

All the above authors as well as others not quoted here believe that the figurines from Nemrik are evidence of unspecified religious beliefs held in northern Mesopotamia in the 8th and 7th millennia bc, *i.e.*, in the aceramic "Neolithic" period. This interpretation is at once obvious and banal: it is hard to imagine a different "application" of such highly developed art in those days.

In fact, the banality of this explanation is so embarrassing that it is worth making an effort to arrive at a more elaborate hypothesis concerning the significance of the figurines.

1. A total of 26 figurines (cf. Table 1 and Figs 1–5) and fragments thereof were discovered in Nemrik. The collection consists of:

(a) five whole specimens,

(b) 21 fragmentary specimens, including:

—specimens with preserved head (top parts);

—figurine shafts (bottom parts) with surviving tip;

—figurine shafts (middle parts) without tip;

—nine figurine halfproducts in various stages of completion.

The presence of figurine halfproducts, which were as a rule destroyed specimens, and also the remodeling of used-up figurines, means of course that sculpting was done locally (traces of a workshop were discovered near house 4), most probably in specialized workshops employing highly qualified artisans (cf. remarks on style below).

Sculpting was clearly an activity of local character since there are no traces of similar representation in sites from Iraqi steppes contemporaneous with Nemrik (M'lefaat, Qermez Dare) or from the Syrian steppes (Mureibet). Recently there did emerge Anatolian analogies dating to the early Nemrik times (from Hallan Çemi), but these sculptures are stylized rather than realistic.

The distinction between complete and incomplete Nemrikian figurines and fragments thereof raises the problem of interpreting the causes of the incompleteness of some of the finds. On the one hand they are obviously specimens destroyed in the course of production or subsequent use. Such objects frequently occur as pebbles in stone pavements of the site. However, some of them may have been destroyed intentionally in order to "kill" an object placed in a grave (cf. remarks on house 6).

2. The figurines represent various things, and are either zoomorphic (predominantly) or anthropomorphic. The former include (Figs 1–4):

—a bird head/skull;

—an eagle head;

—a vulture head;

—a head of an unknown bird of prey (halfproduct);

—a female lion or panther head;

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Table 1 Description of figurines from Nemrik and their stratigraphic position.

Inv. no.	Description	State of preservation	Place of discovery/ association	Phase
2294/87	vulture head on shaft	complete	house 2A, floor	III
2397/87	entire snake	complete	house 5, fill	V
2387/87	male head (phallic) on shaft	incomplete, base broken off	house 6, grave 15	II
3208/89	eagle head on shaft	incomplete, base broken off	house 3, KM layer	V
2950/88	bovid hoof on shaft	complete	KM layer	IV
2517/87	fur (?) animal head on shaft	complete	Assyrian tell	III-V
1801/87	lion-panther head on shaft	complete, damaged right before completion	KM layer	IV
2278/87	body of woman (?) or animal (??)	charred, incomplete, head broken off	KM layer	IV
531/86	bird skull on shaft	incomplete, base broken off	refuse pit PT	V?
1087/86	bird head on shaft	halfproduct, base broken off	KM layer	V
2550/87	head on shaft	halfproduct, top part damaged	KM layer	IV-V
3267/89	head on shaft	halfproduct, base broken off	KM layer	IV
3202/89	(bird?) head on shaft	halfproduct, base broken off	KM layer	IV
2287/87	head on shaft	halfproduct, base broken off	KM layer	V
1530/86	head on shaft	halfproduct, base broken off	KM layer	IV?
1086/86	head on shaft	halfproduct, base broken off	KM layer	V
2687/87	head on shaft	halfproduct, base broken off	K layer	II-III
528/86	head on shaft	halfproduct, base broken off	KM layer	IV-V
	pebble shaped like a head on shaft	specially selected blank?	?	?
	shaft	base	?	?
	shaft	middle part	?	?
3121/88	shaft	base	house 9A, fill	II
529/86	shaft	middle part	KM layer	IV-V
3169/89	animal head on shaft; small ears, groove on crown of head	incomplete, base broken off, head turned into a chopping tool	KM layer	V
2239/87	head on shaft (lion?)	halfproduct, incomplete head remodeled by striking	house 4, fill	IV
2388/87	head on shaft (phallus?)	incomplete, charred head remodeled by striking, base missing	house 4, fill	IV

—a head of a small fur mammal;
—an aurochs leg;
—a snake representation.

Among the anthropomorphic figurines we have:
—a male head with tattooed cheeks;
—a figure of a woman (or perhaps an animal?).

This great variety of themes in the Nemrikian figurines (7/8–9 motifs), coupled with their considerable stylistic uniformity (see below) appear to be the distinctive features of the whole collection. One is tempted to believe that if the entire site were to be explored, this list of motifs would expand considerably.

The individualized themes suggest that we may have to do in Nemrik with individual deities connected to single houses (families) or even individual persons. If this were so, then we would have here a "pantheon" of domestic deities.

The hypothesis about the cult character of the figurines and their connection with specific houses or people will be documented further on basing on finds from houses 2A, 5 and 6.

3. Most of the Nemrikian figurines consist of a circular shaft topped by a sculpted head or skull. The opposite end of the shaft served as a grinder or, much less frequently, is shaped like a chopping tool.

The head may be positioned horizontally or tilted upwards. The bovid leg is similarly structured, with the hoof taking the place of the head. The snake also fits the convention, although in this case the shaft is more sculpted, with a convexity fashioned in its middle part.

The stylistic uniformity of the whole series is readily apparent in view of:

(a) the thematic similarity,

(b) similarities in figurine structure,

(c) similarities in technical execution (the same sequence of preformation using the piquetage technique, initial smoothing, sculpting of details with a flint tool and polishing);

(d) the realistic nature of depictions with all their fine details.

In all, we have here a high-class artistic phenomenon, without any doubt of local origin, which may therefore be viewed as a separate "Nemrikian school of sculpture" dating to 7800–6500 years bc. (Nemrik's first phase is devoid of sculptures.)

The phenomenon has analogies in Anatolia (Hallan Çemi), although the "school" there differs in having produced clearly stylized figurines. This is surprising if one considers that the "material culture" of Nemrik is clearly similar to that of the Zagros zone (all the way to Iran), and to a lesser extent of Syria, rather than of Turkey.

4. Three features, namely houses 2A, 5 and 6, provided some clues as to the function of the ceramic figurines.

House 2A (Figs 2 and 6). This circular structure, dated to settlement phase III, yielded a complete charred vulture figurine. It lay beak up on the northern incline of a bench which was one of the architectural elements of the house. Some 60 cm to the west of the figurine, on this same bench, there was found a severely charred human skeleton, oriented N-S, with arms outstretched towards the figurine. The skeleton was buried beneath two layers forming the fill of the house. There was red clay directly on the bones, and overlying it was strongly charred clay. A thin layer of plaster separated the two clay layers. This arrangement is no doubt the result of a violent destruction of the house by fire. One of these layers is from a collapsed wall and the other from a caved-in roof.

One gets the clear impression that the resident of house 2A attempted to rescue from the burning house the figurine, which must have been precious to him and which was permanently kept inside the building. He failed in his attempt and died in the blaze (charred bones), while the figurine remained on the floor and was also charred.

Two things are important here. Firstly, we have direct evidence of the organic connection of the figurines with houses; secondly, the tragedy which took place in house 2A indicates that the sculptures had an extraordinary significance for the Nemrikians.

Moreover, it appears that the complete figurines were most probably associated with houses, unlike the incomplete specimens known e.g. from graves. It is conceivable that the figurines were kept in specially dedicated places, most probably not on the floor however but rather set in or hung on walls.

House 5 (Fig. 1). This subrectangular structure dating to the (youngest) settlement phase V yielded a complete snake figurine, found in the house's fill, 63 cm above the floor and right next to the eastern wall. This artifact could have ended up here in one of two ways: either it was carried into the house interior along with the cultural layer, contemporaneous with the building, that was filling in the house cavity, or else it was trapped in it by a collapsing wall in which it could have been somehow mounted.

If the latter were the case, one has to reckon with the possibility that the wall featured a recess/shelf to hold the figurine.

If so, this would probably be another object, after the one in house 2A, that was venerated by the residents of house 5 and kept in a place specially set aside for it. This would thus be a household member, part of the family. One cannot help thinking about analogies to the household deities known from many ancient cultures.

House 6 (Fig. 2). This oval structure from settlement phase II contained two skeletal burials in the south-eastern part of the tomb, directly on the floor, right up against a wall (graves 15 and 30).

On this floor, between grave 15 and the wall, 15 cm from a skull, there was found an anthropomorphic figurine: a male head in the shape of a glans penis, the face featuring sculpted eyebrows, nose, lips and teeth, but lacking eyes; the cheeks were covered with tattoos. The sculpture is damaged, with the base part missing. Its functional connection with grave 15, or more generally with the tomb—since that is what "house" 6 most probably was—seems to be certain. The figurine is evidently a grave good, and it probably accompanied the buried person while that person was alive, being "killed" (broken) when its owner died.

5. The three cases described above allow the following conclusions:

- The figurines were objects of special importance in the life of the Nemrikian people, evidence of which is the devotion of the person who perished in the fire which consumed house 2A.
- The figurines were originally connected with houses in which they could have been kept in special "altars" in the house walls (houses 2A and perhaps 5).
- It is to be supposed that the figurines were being removed by inhabitants abandoning their houses. Not so in the case of houses that were violently destroyed (2A) from which the domestic deities could not be taken to safety; in this context, the presence of the figurine in house 5 is still to be accounted for.
- It appears that complete figurines are connected with houses (2A and 5?), whereas the intentionally destroyed incomplete specimens should be associated with burials (house 6). It seems that a deity "lived" and "died" with the house owner.
- Traces of work (as a grinder) and the conversion of a figurine into a chopping tool, indicate that the "living" sculptures were used as working tools, probably for ritualistic rather than practical purposes.
- It may be that there was a single deity/sculpture for every house/family, and that the pantheon was considerably diversified. The number of figurines in Nemrik is surprisingly close to the number of houses in the settlement, and this does not necessarily have to be a coincidence.
- Figurines were being placed in graves of particularly important individuals ("house" 6) after first being destroyed, *i.e.*, "killed." This could suggest that when the lord of the house died, his individual deity was put to death while that of his son took over as the house deity.

Generally, we have here what could have been a pantheon of individualized personal or house deities of a kind we never associated with the Early Neolithic.

6. The above conclusions, most of them fairly probable, provide new insights into the spiritual culture of settled Middle Eastern peoples of the Early Neolithic. At least as far as northern Iraq goes, we seem to be looking at domestic deities, possibly personal deities of heads of families. We can now better understand the rather numerous figurines functioning in the cultures of those times, although in all likelihood not all of them must have served the same function as that of those from Nemrik.

Bibliography

Kozlowski, S.K. and Kempisty, A.
1990 *Nemrik, Pre-Pottery Neolithic Site in Iraq. General Report—Seasons 1985–1986*. Warsaw, University Press, pp. 155–162.

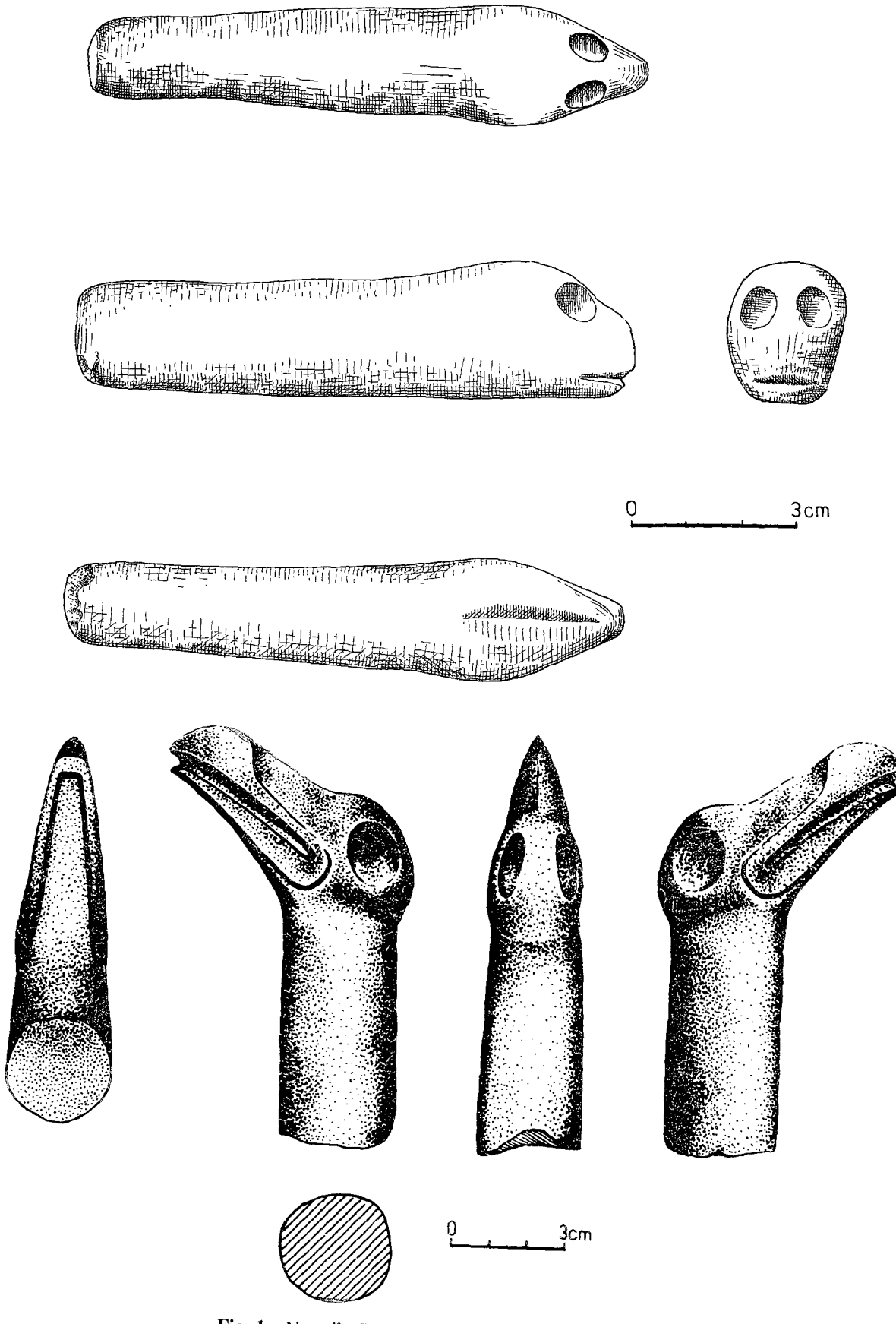

Fig. 1 Nemrik. Stone sculptures: snake and bird skull.

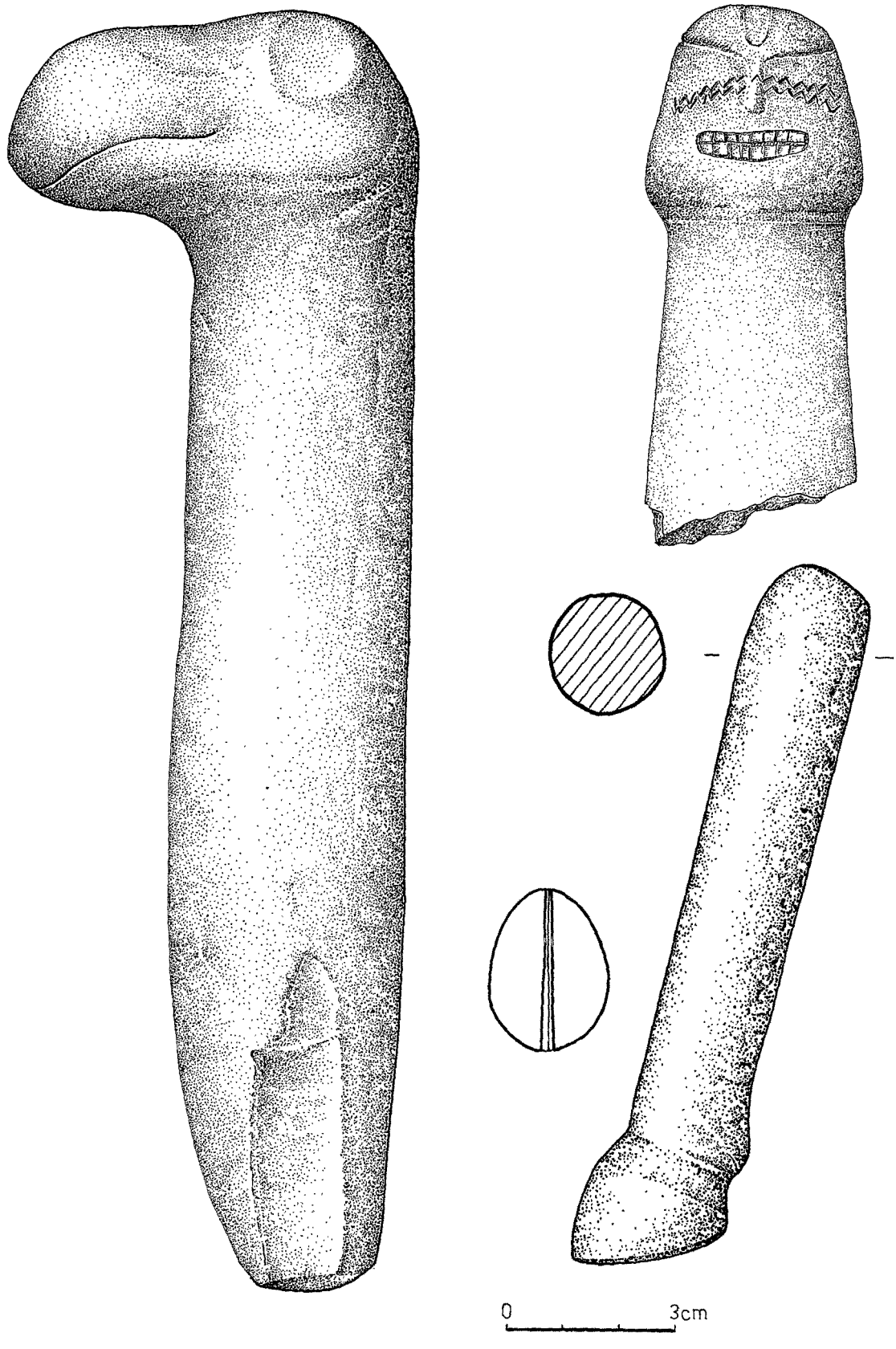

Fig. 2 Nemrik. Stone sculptures: volture, man and bovid hoof.

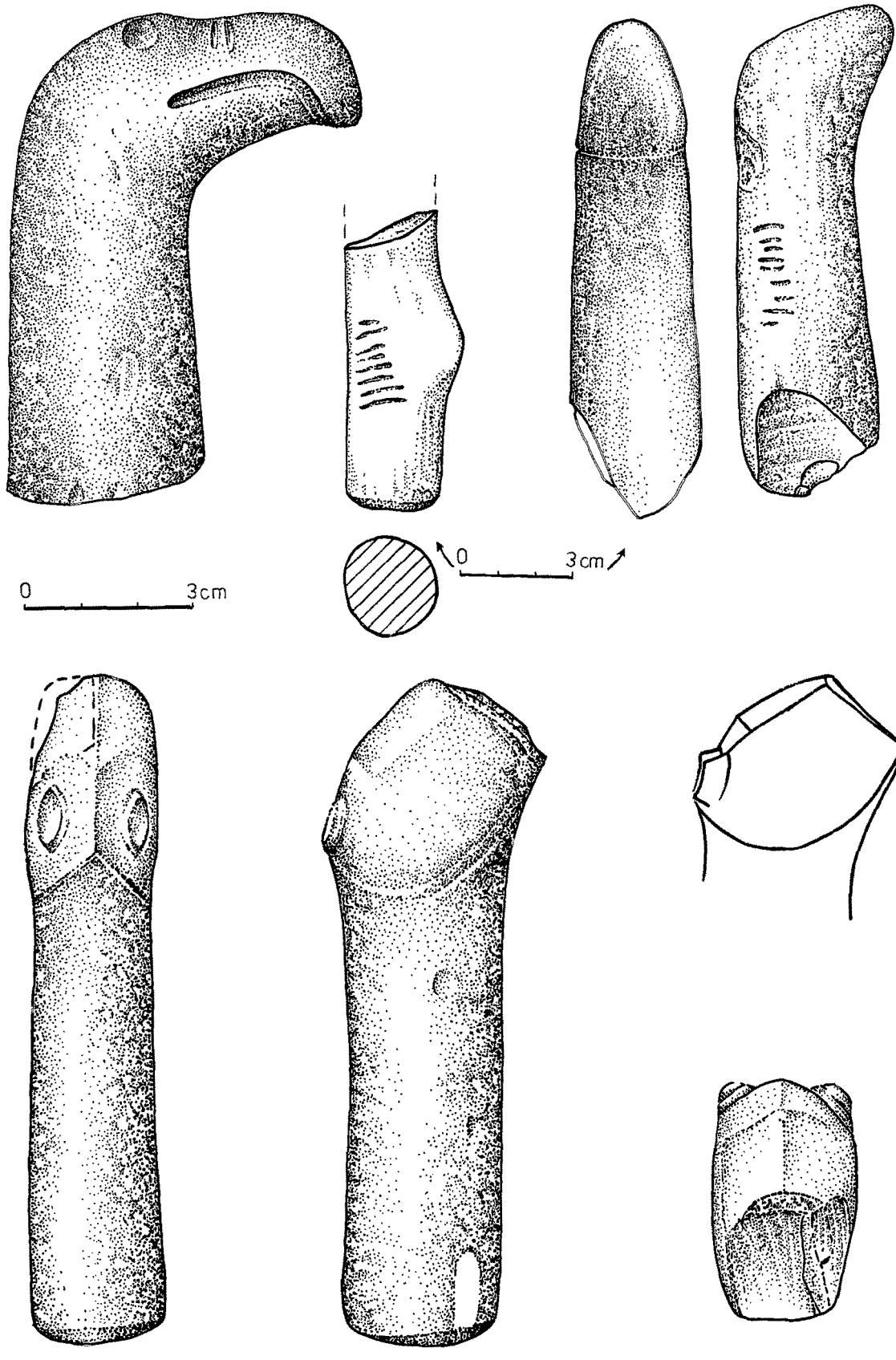

Fig. 3 Nemrik. Stone sculptures: eagle, woman (?), fur animal and lion/leopard.

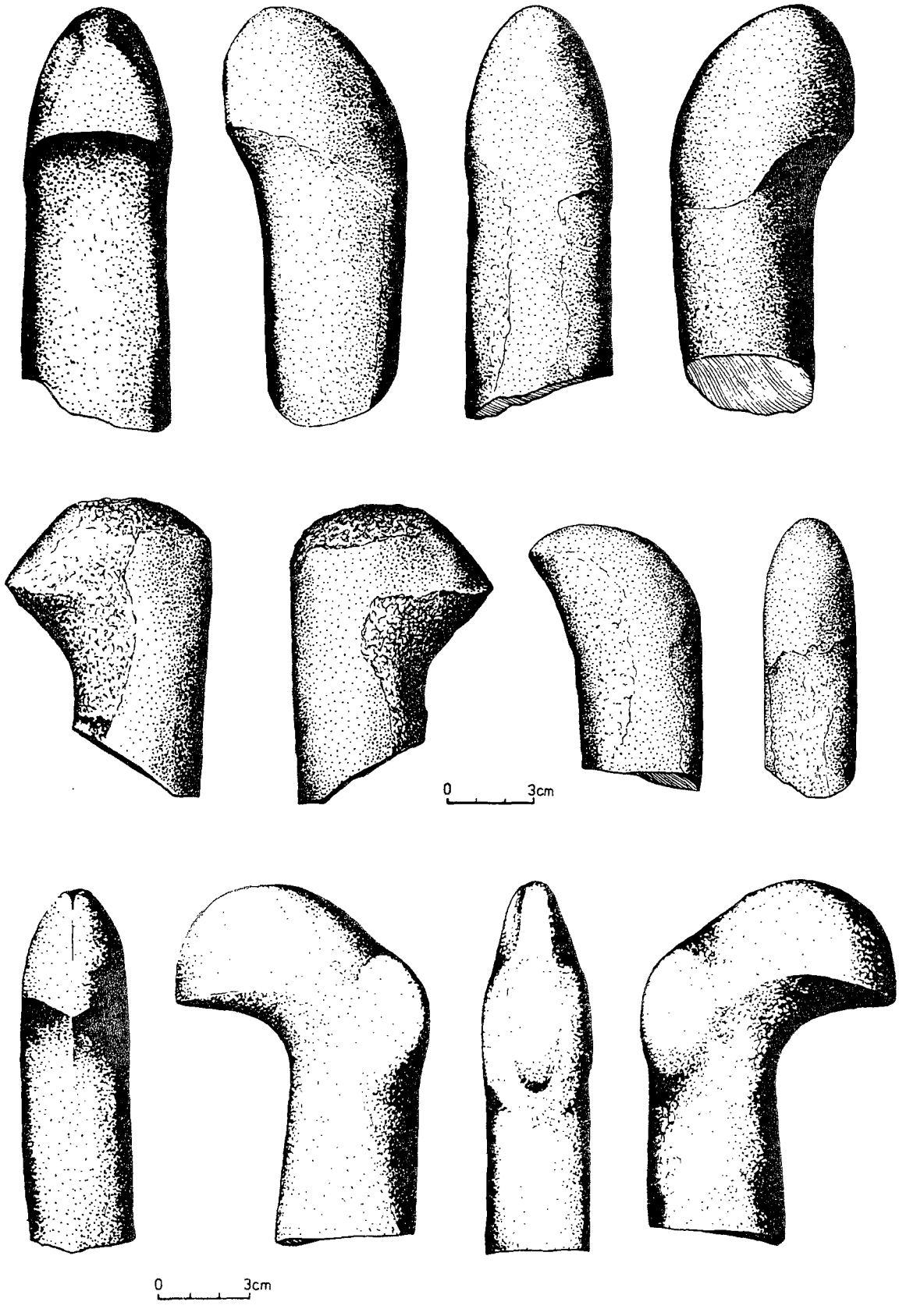

Fig. 4 Nemrik. Stone sculptures: half products, bird of prey.

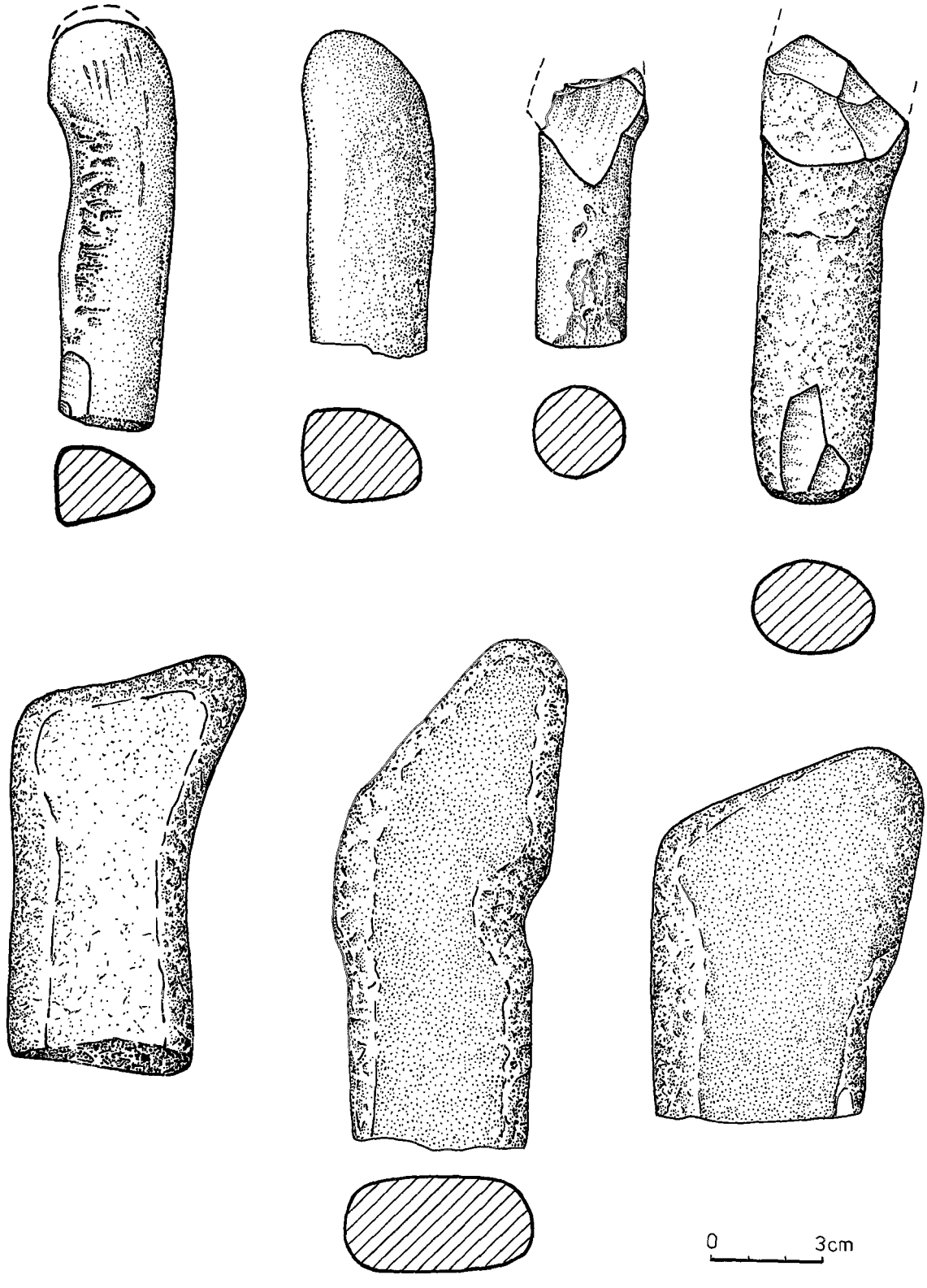

Fig. 5 Nemrik. Stone sculptures: half products and destroyed/reworked sculptures.

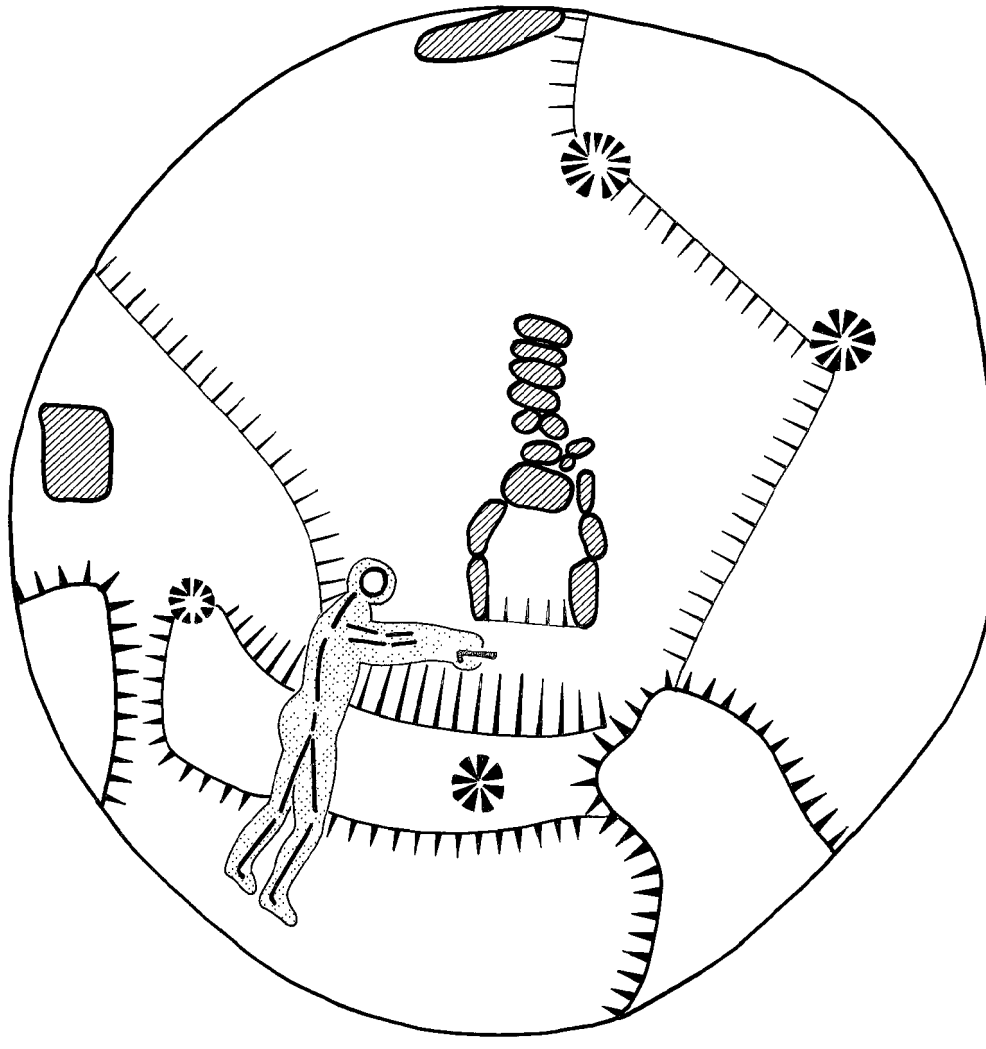

Fig. 6 Nemrik. Plan of House 2A.

CHRONOLOGY OF THE "PROTO-NEOLITHIC" OF IRAQ AND SYRIA —A HYPOTHETICAL VIEW—

Katsuhiko OHNUMA*

Introduction

In the prehistoric research of West Asia today, we have several questions still unanswered concerning the "Proto-Neolithic"[1] of north Iraq and the north-eastern part of Syria along the Euphrates. One of them, particularly, concerns how we place each of the relevant sites within the chronological framework ranging from the end of the Epi-Palaeolithic to the beginning of the Pottery Neolithic of the area[2].

Because we suppose in the current state of knowledge that the "Proto-Neolithic" of Iraq and Syria passed several stages in the Epi-Palaeolithic to Neolithic transition there, we may try to clarify various aspects of the material elements within the transition itself, by examining concrete archaeological traces left by the "Proto-Neolithic" people.

Such a trial is certainly to yield valuable information to help us gain real pictures of the transition, revealing continuity or change in the material remains, which resulted from various forms of adaptation of the "Proto-Neolithic" people to natural and social environments they faced or from foreign concepts introduced from the outside.

It thus becomes inevitably important first, in trying to gain the real pictures of the transition, to establish a certain chronological scheme which covers many of the sites concerned and which is based on a sound analysis method.

Up to the present, however, the relevant sites in Iraq and Syria have been broadly lumped together under a vague notion "transition", roughly dated to the end of the Epi-Palaeolithic through the beginning of the Pottery Neolithic of the area, namely, to the time range from 9,000 to 7,000 B.C. [Mellaart 1965].

The aim of this paper is to review the "Proto-Neolithic" sites in Iraq and Syria in terms of techno-typology of the lithic industries, and to place them, on the basis of differences in several aspects of the material remains, into a chronological scheme tentatively proposed.

"Proto-Neolithic" Sites of Iraq and Syria

The "Proto-Neolithic" sites of Iraq amount to seven at least. They are represented by the open-air sites at Zawi Chemi Shanidar, Karim Shahir, M'lefaat, Nemrik 9, Qermez Dere, Der Hall, and Maghzaliyah. All of these sites are located in the "Zagros flanks" in the northern part of Iraq. Several sites in the north-eastern part of Syria along the Euphrates at Mureybet, Abu Hureyra, and Bouqras are comparable to the Iraqi sites (Fig. 1).

The site of Zawi Chemi Shanidar is located in the Shanidar valley, on the first prominent terrace of the left bank of the Greater Zab river, a branch of the Tigris [Solecki 1981]. Layer B bears Mesolithic features, and is dated by a C^{14} determination to 8,920±300 B.C. A circular stone architecture, called Structure I, was found from this layer. Walls of this structure measured about 2 m in diameter, and are built of large and small rocks and fragments of stone tools. The lithic artifacts are made on flint,

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1) I follow Mellaart [1965: 18] in using the term "Proto-Neolithic". This term seems to be more appropriate than "Pre-Pottery Neolithic", which presupposes that the time range in discussion was before the emergence of pottery, or "Aceramic Neolithic", which implies that it had no pottery. Pre-potteriness does not apply to all the sites reviewed in this paper, Mureybet Phase III having pottery [Cauvin 1979: 35], and the presence or absence of pottery does not necessarily mean difference in time.

2) See Cauvin [1994: 19–21] for a comprehensive chronology based on C^{14} determinations, which covers the whole area of West Asia.

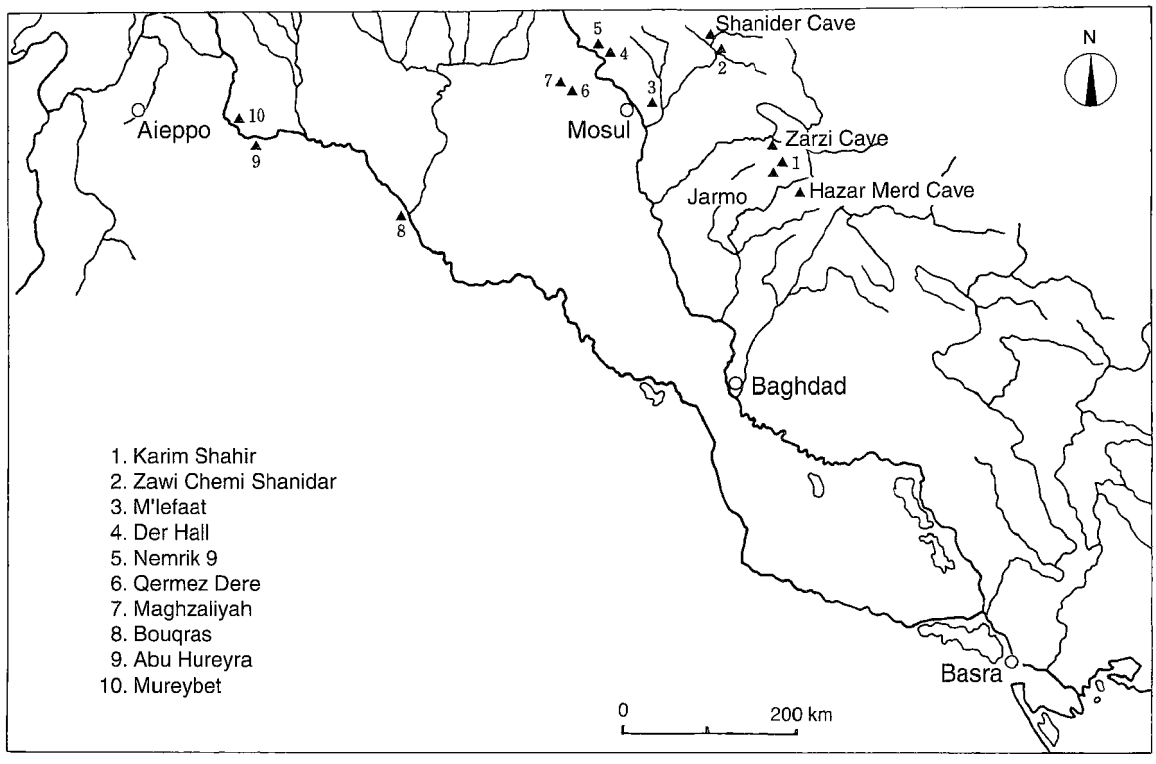

Fig. 1 "Proto-Neolithic" Sites of Iraq and Syria.

consisting of backed blades, denticulated pieces, notched pieces, truncated pieces, borers, side scrapers, *pièces esquillées*, and geometric microliths of the lunate category (Fig. 2–5, –6, –7). Neither sheen-bearing pieces nor micro-burins are reported. The striking plarforms of the cores are single, double, and triple. Judging from the published photograph of the cores [*ibid.*: Plate 13], it is unlikely that the blades and micro-blades were pressure flaked at this site. The stone celts are either wholly chipped or bit-polished. Wholly polished celts are very rare. Stone artifacts such as mullers, querns, and pecking stones are also reported. A fragment of a large shallow stone bowl, made of quartzite, is reported. Animal bones are of sheep and/or goats, most likely wild, and of birds. Objects made on bone and antler, most frequently of sheep, goat and red deer, are abundant, consisting of borers, spatulas, points, beads, ornaments, and grooved hafts.

The site of Karim Shahir is located east of Chemchemal in the province of Kirkuk [Howe 1983]. A single occupation floor, 500–600 m^2, which is composed of stone pavement and pits was unearthed. This floor is dated to between 8,900 and 8,600 B.C. [*ibid.*: 130–131], and yielded an enormous amount of lithic artifacts. The lithic artifacts are made on flint, and consist of backed micro-blades, drills, end scrapers, side scrapers, obliquely truncated pieces, and many notched pieces. Because no geometric microliths as a true category were found, the micro-burins from this site are regarded to have been the by-products in the manufacture of the obliquely truncated pieces, unrelated to the micro-burin technique for the production of geometric microliths. Sheen-bearing pieces are very rare. Most of the blade or micro-blade cores are conical in shape, and their published illustrations [*ibid.*: Figs. 20–2, –4, 21–3, –4] testify that the pressure flaking was being used at this site to detach micro-blades (Fig. 3–4). Nearly half of the stone celts are wholly polished, and some are chipped with polished bits. Querns, mortars, and mullers are also reported. Half (47%) of the animal bones are of sheep and goats, which are reported to have been hunted. Bones of wild boars, deer, gazelles, wild cattle, foxes, hares, turtles, and birds are also reported. Only a small number of bone objects are reported. They consist of pins, made by polishing, and beads.

The site of M'lefaat is located north-east of the Tigris-Greater Zab junction, on the west bank of the river Khazir. Lying to the west of M'lefaat and the river Khazir is the plain of Mosul [Dittemore 1983]. Three stone-made floors, 4×3m in area and dated to between 8,900 and 8,600 B.C. [Howe 1983: 130–131], yielded lithic artifacts made on flint, which include notched pieces, micro-blades with use-nibbled edges, scrapers, and perforators. Neither geometric microliths nor micro-burins are reported. Some of the micro-blade cores are conical in shape. It was demonstrated, on the basis of parallel ridges and edges and consistent width of the micro-blades, that the pressure flaking had been employed to detach the micro-blades at this site [Dittemore 1983: 673–674] (Fig. 3–2). The stone celts are either wholly polished or bit-polished [*ibid.*: 681]. Querns and mortars are also reported. About half of the animal bones are of sheep and gazelles. Bones of wolves, foxes, wild cats, wild pigs, wild cattle, lesser mole rats, hares, and birds such as ducks and geese are also reported. It is strongly suggested that the sheep was hunted at this site [Turnbull 1983]. Very small number of bone objects were unearthed, consisting of borers and fragments of hafts.

The site of Nemrik 9 is located in the southern part of the Dohuk governorate, some 48 km north-northwest of Mosul. About 1.5 km south of this site is the river Tigris [Kozlowski (ed.) 1990]. At least three settlement phases belonging to the pre-pottery Neolithic period were confirmed at this site. These phases are dated by C^{14} determinations to between the 9th millennium B.C. and the first half of the 7th millennium B.C.: the oldest phase to the 9th millennium B.C., the middle to the 8th millennium B.C., and the youngest to the end of the 8th millennium through the first half of the 7th millennium B.C. [Kozlowski and Kempisty 1990: 349–350]. Several structural remains were unearthed associated with these three phases. The structures show an evolutionary scheme of architecture, roughly corresponding to the three settlement phases: the simplest hut-like structures and *tauf*-walled circular houses → circular houses with walls of sun-dried mud-bricks and wooden roofs → subrectangular houses with walls of sun-dried mud-bricks and marl pillars [*ibid.*: 352–359]. The lithic artifacts made on flint from nearby deposits show essentially the same features throughout the settlement phases, that is, retouched blades, end scrapers, scrapers, perforators, tanged points called "Nemrik point", and microliths such as backed micro-blades. Khiam points were also unearthed, though in a small number. This point type is most numerous in the oldest phase [Kozlowski 1994]. Neither geometric microliths nor micro-burins are reported [Kozlowski and Szymczak 1990]. A considerable number of very regular conical cores (Fig. 3–1) led the authors to conclude that the pressure flaking had been used at this site to detach the blades [*ibid.*: 97]. It is also concluded that in the oldest phase the blades were being struck off with the aid of a punch[3], while from the middle phase onwards they were detached by pressure [Kozlowski and Kempisty 1990: 350]. Several sheen-bearing pieces were unearthed [Kozlowski 1990], and the stone celts are wholly ground/polished. Querns, mortars, pounders, and grinders are also reported [Mazurowski 1990a]. There are four fragments of stone vessels made of marble, sandstone and limestone. These fragments are said to have been derived from stone bowls [Mazurowski 1990b]. The animal bones are of cattle, pigs, sheep, goats, antelopes, gazelles, hares, foxes, and beavers. The domestication of cattle, pigs, sheep, and goats was confirmed [Lasota-Moskalewska 1994]. Bone objects consist of points, pointed spatulas, chisel-like tools, and borers [Kozlowski and Mazurowski 1990].

The site of Qermez Dere is located in the north-western outskirts of the town of Tel Afar, some 60 km west of Mosul [Watkins *et al.* 1991]. Three houses with enclosure were unearthed at this site. Each of them was composed of a single chamber with floor, 18–24 m^2, constructed below ground level and egg-shaped in outline. The floor and walls, leveled and lined at the very time when a hole was dug to

3) Experimental replication demonstrates that blades produced by indirect percussion bear features intermediate between those of blades produced by direct percussion and pressure, and as such are not easily differentiated from both of them [Inizan *et al.* 1992: 61]. Up to now, no punches have been found in archaeological contexts, and ethnographical observation on its use has been scarcely reported. It seems more reasonable, therefore, to think that at Nemrik 9 the blades were being detached by either direct percussion or pressure in the oldest phase than to conclude that they were being struck off by indirect percussion.

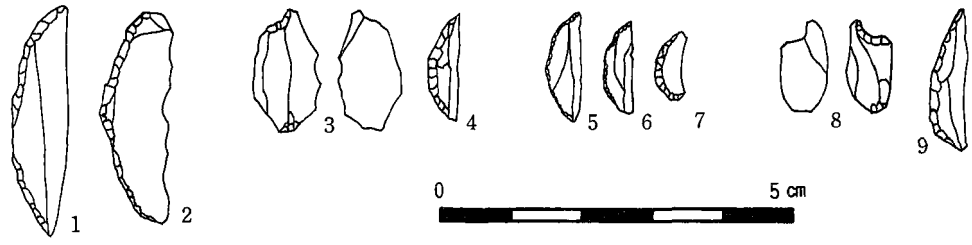

Fig. 2 Lunates (1~2, 4~7, 9) and Micro-burins (3, 8) from "Proto-Neolithic" Sites of Iraq and Syria. 1~2. Abu Hureyra, LE [Olszewski 1986: Fig. B-17]; 3~4. Der Hall; 5~7. Zawi Chemi Shanidar [Solecki 1981: Fig. 10-x, -w, -u]; 8~9. Mureybet, Phase Ia [Cauvin 1991: Fig. 11–4, -1]. (All are made on flint). (All are re-drawn by the present author from the original illustrations).

make the chamber, were coated with gypsum and clay acquired from nearby wadi beds. Seven settlement phases, grouped into three stages, were confirmed in these houses: the oldest stage, Phases 7 and 6, placed in the transition from the Mesolithic to the Neolithic periods, the middle stage, Phases 5 and 4, with no Mesolithic features and belonging to the early Pre-Pottery Neolithic period, and the youngest stage, Phases 3 and 2. Except for some geometric microliths and micro-burins from the oldest stage and the "Nemrik point" from Phase 4 onward, the lithic artifacts from Qermez Dere are essentially the same all through the phases, mainly consisting of notched pieces, denticulated pieces, and Khiam points. Backed blades, scrapers, and burins are small in number. There is a single example of sheen-bearing blade. The cores generally have a single striking platforms. Judging from the published illustration of the cores [*ibid.*: Fig. 8–4] (Fig. 3–5), it is highly likely that the pressure flaking was being used at this site to detach the blades and micro-blades[4]. The raw materials commonly used for the lithic artifacts are various kinds of chert-like flint. It is noteworthy that the brown flint was used almost exclusively in the youngest stage and was rarely used in the earlier stages. Querns and grinders are very small in number. The most numerous animal bones are of gazelles. Bones of sheep, goats, hares, and birds are also reported. It is stated that the sheep and goats were not domesticated at this site [*ibid.*]. Bone objects consist of points and frgamentary needles, though small in number.

The site of Der Hall is located some 40 km north-northwest of the city of Mosul, on the edge of the projected left bank of the meandering area of the river Tigris [Ohnuma and Matsumoto 1988]. Level 6 of this site yielded a lithic industry without pottery. Neither structural remains nor living floors were confirmed associated with this level. The lithic artifacts are made on chert- or agate-like flint, generally of a fine grain. They consist of denticulated pieces, notched pieces, geometric microliths of the lunate category (Fig. 2–4), few blades, and many flakes and micro-blades. There are no examples of sheen-bearing pieces. A considerable number of micro-burins were also unearthed (Fig. 2–3), testifying the existence of the micro-burin technique to produce the lunate microliths at this site. Cores are varied in form, and most of them were for micro-blades. The outward appearance of the cores (Fig. 3–7) indicates that the pressure flaking was not being used to detach the blades and micro-blades. A single stone celt was unearthed, which is bit-polished. Stone artifacts such as querns and mortars were not found. The animal bones are of sheep, goats, turtles, deer, and cattle. The domestication of the sheep and goats is not demonstrated [Abe 1988].

The site of Maghzaliyah is located some 12 km west of the town of Tel Afar, on the northern edge of the village of Abra Najar [Bader 1993]. Stratum 2 at this site yielded several rectangular houses. These houses were constructed of rectangular rooms, about 5.3 m in the longer side and 1.4–2.3 m in the

4) According to Dr. A. Betts (personal communication in March 1995), fine-grained brown flint was exclusively used in the youngest stage (Phases 3 and 2), and the micro-blades from this stage are bigger and more regularly produced than those from the earlier stages, resembling in these respects the specimens from Nemrik 9. It appears most probable, therefore, that at Qermez Dere pressure flaking was being used to detach blades and micro-blades at least in the youngest stage.

shorter, and stone foundations, 40–50 cm high and about 80 cm in width. The upper stratum, 3, yielded houses similar to those from Stratum 2. The house from Stratum 4 is the biggest of the structural remains unearthed at this site. It is stated that this house was associated with the defence wall which appeared for the first time at Maghzaliyah. The lithic artifacts are made on obsidian, except in the upper-most Stratum 4 with flint ones slightly increasing. The lithic artifacts are almost the same throughout the strata, consisting of scrapers, end scrapers, borers, tanged points, large flakes used unhafted as sickle blades, and segmented blades to be inserted into sickles. Geometric microliths are very rare. Blade cores are conical in shape or "bullet-shaped". Very regular flake scars on the cores testify that the blades were carefully pressed off at this site. It is stated that the obsidian cores and tool-blank flakes were brought to the site from a considerable distance after being shaped out [*ibid.*: 13]. Flint celts with polished bits are reported. Querns and grinding stones are abundant. Ten fragments of

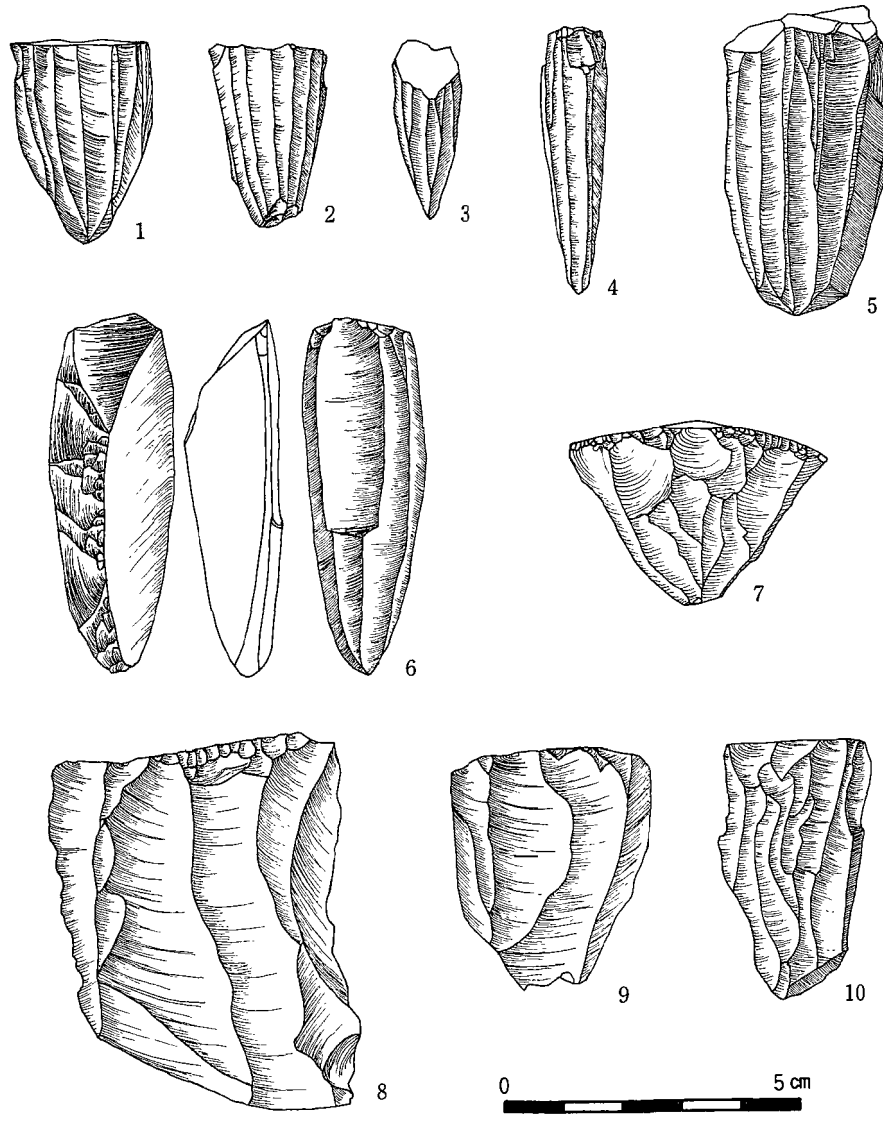

Fig. 3 Cores from "Proto-Neolithic" Sites of Iraq, Syria and Turkey.
1. Nemrik 9 [Kozlowski and Szymczak 1990: Fig. 26]; 2. M'lefaat [Dittemore 1983: Fig. 240–1]; 3. Abu Hureyra, Neolithic Phase 2 [Moore 1975: Fig. 7–17]; 4. Karim Shahir [Howe 1983: Fig. 21–4]; 5. Qermez Dere [Watkins *et al.* 1991: Fig. 8–4]; 6. Cafer Höyük [Cauvin and Aurenche 1982: Fig. 7–2]; 7. Der Hall; 8. Mureybet, Phase III [Calley 1986: Fig. 137–2]; 9. Mureybet, Phase Ia [Calley 1986: Fig. 130–3]; 10. Abu Hureyra, LE [Olszewski 1986: Fig. B-33]. (All but Nos. 3 and 6 on obsidian are made on flint). (All are re-drawn by the present author from the original illustrations).

stone vessels, made of marble, are also reported. 60% of the animal bones are of wild species such as mountain goat, wild ass, wild cow, wild boar, and mouflon, while 40% are of domesticated species such as sheep, goat, and cow. Bone objects consist of polishing tools and fragments of elaborately made needles. Traces of cultivated einkorn and emmer wheats and of cultivated barley are confirmed.

The site of Mureybet is located on the left bank of the Euphrates some 86 km south-east of the city of Aleppo. Six phases unveiled at this site are dated by C^{14} determinations: Phase Ia to 8,500 to 8,300 B.C., Phase Ib to 8,300 to 8,200 B.C., Phase II to 8,200 to 8,000 B.C., Phase III to 8,000 to 7,600 B.C., Phase IVa to 7,600 to 7,300 B.C., and Phase IVb to 7,300 to 6,900 B.C. [Cauvin 1979]. The lithic artifacts of Phase Ia are made on flint, consisting of scrapers, truncated pieces, backed micro-blades, borers, tanged flake points, geometric microliths of the lunate category (Fig. 2–9), and micro-burins (Fig. 2–8). Sheen-bearing blades were also unearthed. There are no traces of pressure flaking on the cores (Fig. 3–9). Stone vessels are reported. Bone points were also unearthed. Phase Ib yielded a semi-underground round house, 6 m in the inside diameter. This house has a wall, 50 cm in height, and clay-coated pillars. The lithic artifacts of this phase are made on flint, and are almost the same in features as those of Phase Ia, except that Khiam points appear for the first time in this phase. No traces of pressure flaking are recognized. Comb-like ornaments made of bone are reported. Phase Ib is placed in the transition from Phase Ia to Phase II (Khiamian) [Cauvin 1991]. In Phase II, 3 round houses, constructed directly on the round house of Phase Ib using its space, and 7 round houses, less than 4 m in the inside diameter, were unearthed. The lithic artifacts of this phase remain small, but geometric microliths dramatically decrease in number. Backed micro-blades, borers, Khiam points, tanged points, end scrapers, and burins become the main lithic components. Obsidian micro-blades were also unearthed, but no traces of pressure flaking are recognized. Querns and crushing stones are reported, as are fragments of polished stone batons. A bone object like spatula with its end denticulated is also reported. In Phase III, several round houses were also unearthed. They vary in size from 2.5 to 6 m in diameter, and are characterized by their insides being divided by stone foundations, about 70 cm in width and crossing each other orthogonally. In this phase, blades were detached from "Naviform" cores for the first time at Mureybet. Khiam points still exist, and tanged points, end scrapers, and burins increase. Small tools disappear, however. Sheen-bearing blades are reported. Querns and polished stone batons are also reported. Spatulas and borers made of bone are also reported. It is particularly noteworthy that pottery and other clay objects were unearthed in this phase. It is stated by several authors that obsidian cores of Phase IIIb were reduced by pressure flaking [Cauvin 1994: 288], but this is not clear enough[5] in the illustration published [Calley 1986: Fig. 138]. Phase IVa is characterized by a large number of denticulated pieces. "Naviform" cores exist, as do sheen-bearing blades. Byblos points appear for the first time in this phase. Some of the points from this phase suggest that they were retouched by pressure [Cauvin 1979: Fig. 19–4]. Polished celts and polished stone batons are also reported. Architectural remains in Phase IVb are very different from round houses of Phase III in that the former have straight, parallel walls, made of clay and straw[6]. Phase IVb is characterized by blades carefully detached from "Naviform" cores. Large Byblos points, blade end scrapers, and borers were also unearthed. There are a large number of burins. Some of the sheen-bearing blades are denticulated. The flat retouch on the Byblos points and other types of points clearly testifies the existence of pressure

5) Using the materials from Cheikh Hassan and Mureybet Phases III and IVa, F. Abbès analyzed knapping techniques of the lithic artifacts of the final PPNA through the initial PPNB periods at these sites. After the analysis, he presented a negative statement against the view that retouch by pressure existed in the PPNA period [Abbès 1994: 312].

6) According to Dr. Y. Okada (personal communication in October 1995), a round building can not be easily enlarged or divided inside, meaning that it can not easily make a large-scale building. The change seen at Mureybet from round houses of Phase III, divided orthogonally in their insides, to rectangular houses of Phase IVb strongly suggests that an incipient concept of large-scale building emerged in Mureybet Phase III, functional division of the inside of a house existing. In *La Maison Orientale* published in 1981, O. Aurenche discussed developmental processes of buildings in West Asia in the time range from 14,000 to 3,700 B.C., placing the round houses of Mureybet Phase III into his Period 2, in which the transition is seen from round buildings to rectangular ones [1981: 294].

retouch in this phase (Fig. 4). Wholly polished stone celts are also reported. With regard to the frequencies of animal bones at Mureybet, there is seen a change through phases. Bones of horses, cows, gazelles, sheep, deer, and boars are all recognized in Phases II through IV, though those of sheep, deer, and boars are always small in number. Bones of horses are numerous in Phase II to the earlier part of Phase IV, those of cows are numerous in Phase IV, and those of gazelles are numerous in Phases II and III and the later part of Phase IV [Ducos 1978]. Traces of einkorn wheat in the wild form and wild barley are confirmed in all of the phases; the former is most numerous in Phase III [van Zeist and Bakker-Heeres 1986].

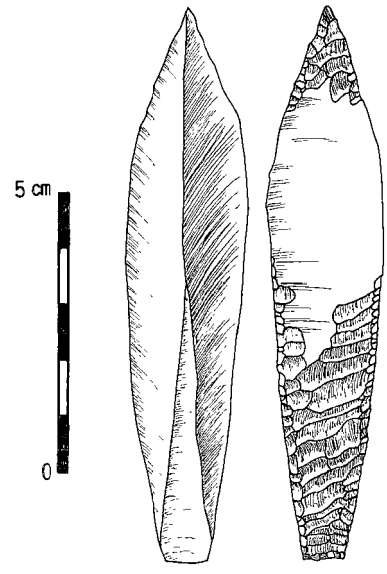

Fig. 4 Point Shaped by Pressure Retouch. Mureybet, Phase IVb [Cauvin 1979: Fig. 20–3]. (Flint-made). (Re-drawn by the present author from the original illustration).

The site of Abu Hureyra is located on the right bank of the Euphrates some 130 km east of the city of Aleppo [Moore 1975]. Epi-Palaeolithic settlement (LE) unearthed at this site, placed in the late Epi-Palaeolithic, is dated by C^{14} determinations to 9,100 to 8,300 B.C. [Olszewski 1986: 73]. Lithic artifacts from LE are made on flint, consisting of denticulated pieces, notched pieces, geometric microliths of the lunate category (Fig. 2–1, –2), borers, burins, backed blades/micro-blades, and scrapers. The geometric microliths are made with the micro-burin technique. No sheen-bearing pieces are reported. There are no traces of the pressure flaking (Fig. 3–10). Rough stone bowls and cups were unearthed in a small number. Many of the animal bones are of gazelle [Legge 1975]. Bone objects consist of borers, points, needles, spatulas, and beads. Traces of wild species of einkorn wheat are confirmed [Hillman 1975]. Neolithic Phase 1 of Abu Hureyra yielded buildings made of mud-brick. They are rectilinear in plan and multi-roomed. Some of these rooms have black-burnished plaster floors. The lithic artifacts of this phase are made on flint, consisting of blades, end scrapers, scrapers, borers, burins, and tanged points. Pecked and polished stone axes were unearthed, as were basalt rubbers and stone balls. Borers made of bone are also reported [Moore 1975; Olszewski 1986]. Buildings of Neolithic Phase 2 have the same features as those of the buildings of Phase 1; both are made of mud-brick and have several rectangular rooms, 3–4 m long and 1.4–2 m wide. The lithic artifacts of Phase 2 are made on flint, consisting of end scrapers, side scrapers, borers, burins, and tanged points. There are sheen-bearing pieces, though very rare. It is clear from the published illustration [Moore 1975: Fig. 7–16, –17, –18, –19] that the pressure flaking was employed in this phase to produce points and micro-blades (Fig. 3–3). Pecked and polished stone axes and chisels are common. In this phase, polished stone bowls and dishes appeared for the first time. Stone rubbers and querns were also unearthed in a large number [Moore 1975; Olszewski 1986]. In Phase 2, bones of sheep and goats are more numerous than those of gazelles, while the opposite phenomenon is seen in Phase 1 [Legge 1975]. Bone objects in Phase 2 become more numerous and more varied than in Phase 1. They consist of various types of borers, spatulas, needles, fish hooks, and dress-fixing objects. In both of Phases 1 and 2, traces of cultivated einkorn and emmer wheats are confirmed [Hillman 1975].

The site of Bouqras is located in the village of Bouqras on the right bank of the Euphrates, near the junction of the Euphrates and its branch, the Khabur, some 310 km south-east of the city of Aleppo [de Contenson and van Liere 1966]. Seven cultural layers grouped into 3 phases were unearthed at this site: Layers 1 and 2 (Phase I: aceramic), Layers 3, 4, 5, and 6 (Phase II: aceramic), and Layer 7 (Phase

III: ceramic). Unearthed from Layer 2 of Phase I was a hut-like structure, 5×6 m, with a straight wall made of clay and straw. The lithic artifacts of Phase I are made on fine-grained flint. It is stated, from the fact that only a single hammer stone and very few cores and chips were unearthed, that the lithic artifacts were not often manufactured at the area excavated [*ibid.*: 183]. The traces on the cores show that they were also used for tools such as scrapers. Both "Naviform" cores and pressure-flaked micro-blade cores were unearthed. Blade end scrapers, tanged points shaped by flat retouch, and points with the base shaped by notch-like retouch are also reported. There are two sheen-bearing blades. Querns were also unearthed. In Phase II, there was unearthed an elaborate building made of large bricks. Phase II is sub-divided into IIa and IIb. Generally speaking, the lithic artifacts of this phase seem to have been associated with meat-diet. Querns, stone bowls, and coarse stone vessels are also reported. In Phase IIa, blade end scrapers, burins, backed pieces, and retouched blades are characteristic, while tanged points are small in number. Sheen-bearing pieces disappear. There are pressure-flaked blades in Phase II, and bone objects such as borers, spatulas, and hafts are reported. Research by P.A. Akkermans and others reconfirmed that the subsistence at this site mainly relied on meat from domesticated animals; their research confirmed here a large quantity of animal bones and extremely few traces of cultivated emmer wheat and bread wheat and of wild cereal. They reported that the bones of sheep and goats are more numerous than those of cows and pigs at this site. It is also reported that these four animals were domesticated in most cases, while gazelles, wild goats, wild cows, horses, and boars were being hunted [Akkermans *et al.* 1981].

Inter-site comparison

The "Proto-Neolithic" sites of Iraq and Syria and their material remains outlined above passed several stages of the Epi-Palaeolithic to Neolithic transition of the area, thereby providing us with important keys to clarify processes of cultural development within the transition.

These sites resemble each other in their artifactual inventories, consisting almost without exception of backed blades/micro-blades, borers, scrapers, burins, and a large number of notched and/or denticulated pieces. The stone celts, wholly polished or bit-polished, are also seen constantly. The frequencies of the lithic artifacts, however, are more or less different from site to site.

It is possible here to see inter-site differences on the basis of 1) presence or absence of particular types of lithic artifacts, 2) technologies in their manufacture, 3) appearing and developing processes of point types, 4) features of architectural remains, and 5) domestication of animals and cereals.

Each of these five phenomena may be summarized as below.

1) Geometric microliths, micro-burins, and several point types are seen at limited sites only.

2) Inter-site differences are seen in the ways how tool blanks were detached from cores and how the blanks were retouched to be converted into tools or weapons; tool blanks were detached by percussion or pressure on the one hand, and the blanks were retouched by percussion or pressure on the other.

3) Appearing and developing processes of Khiam points, "Nemrik points", and Byblos points provide us with useful bases to separate the relevant sites in time. Khiam points first appeared in Phase Ib at Mureybet. In Syria, they disappeared in Mureybet Phase IVa, but in Iraq they were more or less present in all the phases at Nemrik 9 and Qermez Dere. It seems that "Nemrik points" are over-emphasized at Nemrik 9 and Qermez Dere. This point type, however, is not very unique; in fact, this point type is defined as having dorso-ventral symmetry, produced by bilateral inverse retouch on the proximal and distal ends of blades, longitudinal horizontality, and diamond-shaped outline. Following this definition, we can recognize them in Mureybet Phase IIIb [Cauvin and Stordeur 1978: Fig. 8–4]. Byblos points first appeared in Mureybet Phase IVa with the disappearance of the Khiam points. At Mureybet, tanged points exsisted from Phase Ib onward, becoming very numerous in Phase IIIb. It is highly likely, therefore, that the Byblos points at Mureybet developed out of tanged points there [Wada 1987].

4) Clay commonly played the most important role in Syria as the construction material for buildings, whereas in north Iraq rocks seem to have been traditionally given much importance. Such a difference may have resulted from availability of rocks usable for building. The plans of the architectural remains of the Iraqi-Syrian "Proto-Neolithic" seem to have been connected with these two kinds of material. Taken altogether, however, they show the change from round to rectangular plans through time: round plans at Zawi Chemi Shanidar, Nemrik 9 (oldest and middle phases), Qermez Dere (egg-shaped), and Mureybet (Phases Ib, II, and III); rectangular plans at Nemrik 9 (youngest phase: sub-rectangular), Maghzaliyah, Mureybet (Phase IVb), Abu Hureyra (Neolithic Phases 1 and 2), and Bouqras.

5) Clear traces of domesticated sheep and goats are seen at three sites only: at Nemrik 9, Maghzaliyah, and Bouqras. Clear traces of domesticated wheats and barleys are seen only at Maghzaliyah, Abu Hureyra (Neolithic Phases 1 and 2), and Bouqras. However, a general tendency is seen at these sites that the bones of sheep and goats are more frequent than those of other animals. Also constantly seen are stone artifacts such as querns, mortars and grinders, which strongly suggests cereal processing.

Conclusion

The above observation that the particular animals and cereal were the main source of foodstuffs in the "Proto-Neolithic" of Iraq and Syria, together with the data from the site of Jarmo, dated to 7,300 through 5,800 B.C. [Braidwood 1983], that sheep and goats [Stampfli 1983] and einkorn and emmer wheats [Watson 1983] were really domesticated there, naturally place the "Proto-Neolithic" in the dawn of new societies which appeared immediately after it and were supported by stable foodstuff supply from full-scale planned domestication of sheep and goats and of wheats and barleys.

Up to now, occurences of particular types of artifacts at given sites, especially their frequencies, have been often regarded as important means for sites' chronology. Such frequencies, however, change easily even among contemporaneous sites, partly due to different spots in the sites excavated which may have functioned differently for various purposes, and partly due to different forms of adaptation which may have resulted from different site localities under various environments. It is thus misleading to separate or unify sites in time on the basis of frequencies of particular artifact types only.

It is highly probable that technologies in the manufacture of lithic artifacts, especially the ways how tool blanks were detached, were more or less consistent over different spots at a given site or under different environments at different site localities.

This high probability leads us to state that inter-site comparison based on different lithic technologies is more effective in chronologizing the "Proto-Neolithic" sites in Iraq and Syria than that based on frequencies of particular artifact types alone; far more so if this comparison is combined with frequency changes of particular artifact types, features of architectural remains, and so on.

In conclusion, I propose here a hypothetical chronology based on the viewpoints mentioned above (Fig. 5). This chronology is modified, with the relevant sites in Syria added, from the one I formerly proposed for the Iraqi "Proto-Neolithic" on the basis of the presence of pressure flaking [Ohnuma 1993]. The chronology proposed here is based on differences in manufacturing techniques of lithic artifacts, presence or absence of geometric microliths, appearing and developing processes of several point types, and features of architectural remains; in it again the presence of pressure flaking is playing a major role.

It seems that in north Iraq and the north-eastern part of Syria, pressure flaking was initially invented or introduced for micro-blade detachment or for retouching in the point manufacture. It also seems that this flaking technique was later adopted for bigger-scaled and systematic production of blades, in association with elaborate blade production represented by "Naviform" core technique[7].

Given below is a supposed process of the appearance and development of pressure flaking in the "Proto-Neolithic" of Iraq and Syria, which seems to agree with the outline of S.K. Kozlowski's schemes of "Nemrikian" and "Mlefatian" developments [1994].

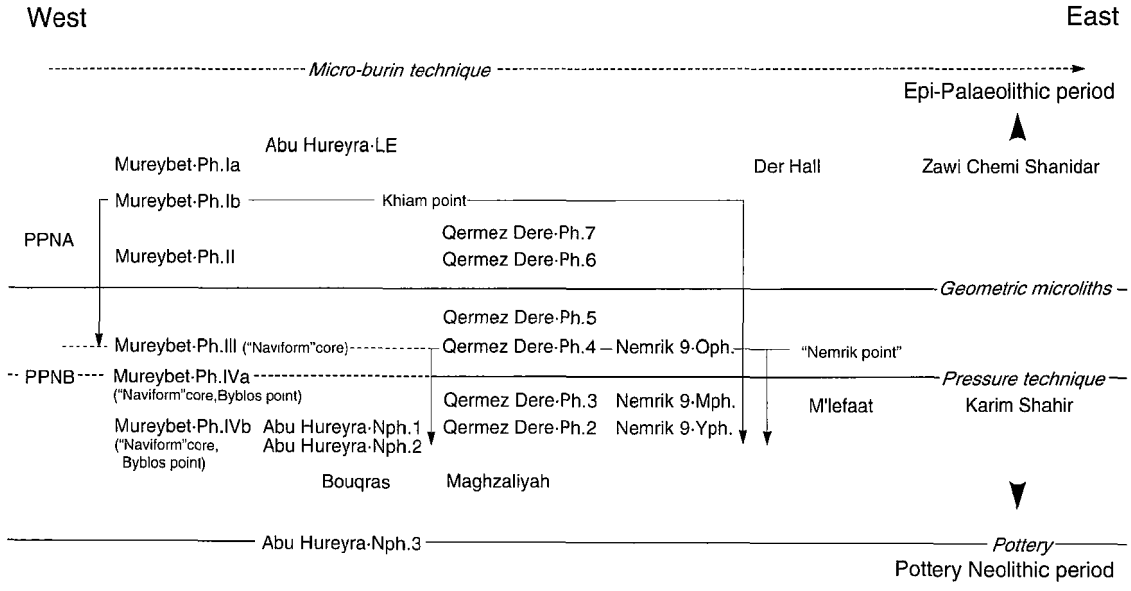

Fig. 5 Proposed Chronology of "Proto-Neolithic" Sites of Iraq and Syria.
LE: Late Epi-Palaeolithic; Ph.: Phase; Oph.: Oldest phase;
Mph.: Middle phase; Yph.: Youngest phase; Nph.: Neolithic phase.

···Influenced by the eastern "Proto-Neolithic" people of north Iraq or elsewhere[8] who produced micro-blades by pressure flaking, the contemporaneous people in Syria adopted this flaking technique for retouching in point manufacture or for micro-blade detachment. Or, to the contrary, the Syrian point manufacture using pressure flaking influenced the eastern "Proto-Neolithic" people, leading them to adopt this technique in micro-blade detachment. At all events, in Syria around the beginning of the PPNB period blades were being elaborately detached from "Naviform" cores by percussion, and the blades thus detached were used as blanks for points or sickle blades that were important components in lithic inventories there. Later, as the necessity of highly regularized blades for blanks of sickle blades, especially for segmented blanks to be inserted into grooved handles as replaceable edges, gradually increased, pressure flaking took the place of percussion in the production of blank blades for sickle blades[9]; pressure flaking was far more efficient to produce highly regularized blades than percussion.

7) "Naviform" core technique carried out by percussion produced very regular blades (see Wilke and Quintero [1994] for replicative experiments). With regard to blade production from a single core, however, replicative experiments demonstrate that pressure débitage produces regular blades far more constantly than "Naviform" core reduction by percussion [Quintero and Wilke 1995]. The coexistence of "Naviform" cores (Layer 1) and pressure-flaked micro-blade cores (Layer 2) in Phase I at Bouqras, together with the presence of pressure-flaked blades (Layer 3) in Phase II [de Contenson and van Liere 1966: Figs. 12b, 13e, 15a], is a good example usable to prove that the pressure flaking, initially invented or introduced for micro-blade detachment or retouching in point manufacture, was later adopted for systematic production of longer blades (Fig. 6–3, -4) in association with blade production from "Naviform" cores by percussion (Fig. 6–1, -2).

8) The site of Cafer Höyük in the east-southern part of Turkey is dated to the PPNB period. At this site, the pressure flaking was being adopted in the manufacture of Byblos points and detachment of blades [Cauvin and Aurenche 1982: Figs. 8, 12]. And, the cores including the "Naviform" type bear traces of pressure flaking (Fig. 3–6). It seems that there existed similar sites in the area surrounding Cafer Höyük, where obsidian was used as the raw material for lithic artifacts. It is supposed that the pressure flaking appeared in this region independently of north Iraq or in a strong connection with it.

9) It can be said from my own experimental replication that the manufacture of points by pressure retouch does not necessarily need blank flakes that are highly standardized, for the original shapes of the blank flakes can be more or less modified by retouching. On the other hand, blades used as they were for sickles and, especially, segmented blades inserted into grooved handles as replaceable edges of sickles should have needed to be highly standardized with constant thickness and width and horizontality without serious incurvation. It has been often demonstrated through experimental works that such highly standardized blades could be rarely produced by percussion, even in the hands of skilled knappers, and that they could be constantly produced only by pressure débitage (see, e.g. Inizan *et al.* [1992: 63]).

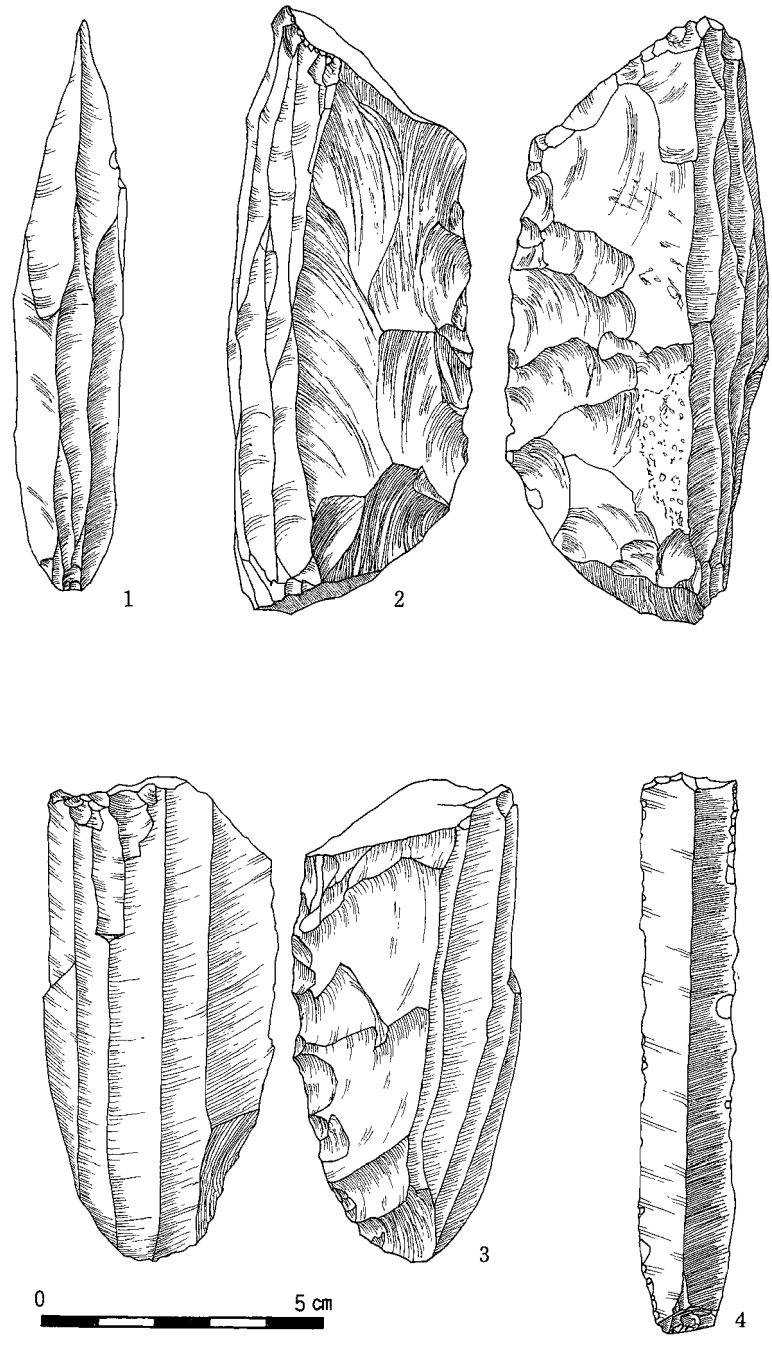

Fig. 6 Percussion Débitage of Blades from "Naviform" Core and Pressure Débitage of Blades.
1. Blade detached from "Naviform" core (Jericho, PPNB) [Payne 1983: Fig. 297–4]; 2. "Naviform" core (Jericho, PPNB) [Payne 1983: Fig. 292–1]; 3. Blade core reduced by pressure (Ceramic Jarmo) [Hole 1983: Fig. 126–7]; 4. Blade detached by pressure (Ceramic Jarmo) [Hole 1983: Fig. 119–7]. (All are made on flint). (All are re-drawn by the present author from the original illustrations).

Thus, systematic production of longer blades by pressure[10] developed in association with mass production of sickle blades, especially of segmented ones, for full-scale agriculture[11]. ···

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I would like to thank Professor Philip J. Wilke of the University of California, Riverside, who has given me a wide range of kind and valuable information on lithic technology, particularly on blade/microblade production. Thanks are also due to Professor Yasuyoshi Okada of the Institute for Cultural Studies of Ancient Iraq, Kokushikan University for his kind suggestions on architectural remains.

References

Abbès, F.

1994 Techniques de débitage et gestion de silex sur le Moyen-Euphrate (Syrie) au PPNA final et au PPNB ancien, *Neolithic Chipped Stone Industries of the Fertile Crescent*, edited by H.G. Gebel and S.K. Kozlowski, *ex oriente*, Berlin, pp. 299–312.

Abe, M.

1988 The Fauna from Tell Der Hall, Eski-Mosul (Iraq), *al-Rāfidān* 9, pp. 91–96.

Akkermans, P.A., Fokkens, H. and H.T. Waterbolk

1981 Stratigraphy, Architecture and Lay-out of Bouqras, *Préhistoire du Levant: Chronologie et Organisation de l'Espace depuis les Origines jusqu'au VIe Millénaire*, C.N.R.S., Paris, pp. 485–501.

Aurenche, O.

1981 *La Maison Orientale*, Librairie Orientaliste Paul Geuthner S.A., Paris.

Bader, N.O.

1993 Tell Maghzaliyah: An Early Neolithic Site in Northern Iraq, *Early Stages in the Evolution of Mesopotamian Civilization*, edited by N. Yoffee and J.J. Clark, The University of Arizona Press, Tucson and London, pp. 7–40.

Braidwood, R.J.

1983 15: Jarmo Chronology, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 537–540.

Calley, S.

1986 *Technologie du Débitage à Mureybet*, Syrie, BAR International Series 312 (i, ii), Oxford.

Cauvin, J.

1979 Les fouilles de Mureybet (1971–1974) et leur signification pour les origines de la sedentarisation au Proche-Orient, *Annual of the American Schools of Oriental Research* 44, pp. 19–48.

1994 *Naissance des divinités, Naissance de l'agriculture*, C.N.R.S., Paris.

Cauvin, J. and O. Aurenche

1982 Le Néolithique de Cafer Höyük, *Cahiers de l'Euphrate* 3, Publications de l'URA 17 du CRA, C.N.R.S., Paris, pp. 123–138.

Cauvin, M.-C.

1991 Du Natoufien au Levant Nord?: Jayroud et Mureybet (Syrie), *The Natufian Culture in the Levant*, edited by O. Bar-Yosef and F.R. Valla, Ann Arbor, Michigan, pp. 295–314.

1994 Synthèse sur les industries lithiques Néolithique Préceramique en Syrie, *Neolithic Chipped Stone Industries of the Fertile Crescent*, edited by H.G. Gebel and S.K. Kozlowski, *ex oriente*, Berlin, pp. 279–297.

10) In pressure débitage of blades longer than palm, hand-held vices are unfit to detach them; if the cores are bigger than palm, it is impossible to stabilize them with hand-held vices. It is also demonstrated that pressure débitage of long blades needs vices, stabilized on the ground, to prevent cores from moving [Pelegrin 1984].

11) It is interesting and important to identify places in West Asia where full-scale agriculture or systematic production of longer blades by pressure flaking emerged.

Cauvin, M.-C. and D. Stordeur
1978 Les outillages lithiques et osseux de Mureybet, Syrie, *Cahiers de l'Euphrate* 1, Publications de l'URA 17 du CRA, C.N.R.S., Paris.

de Contenson, H. and W.J. van Liere
1966 Premier sondage à Bouqras en 1965: Rapport préliminaire, *Annales Archéologiques Arabes Syriennes* 16–2, pp. 181–192.

Dittemore, M.
1983 21: The Soundings at M'lefaat, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 671–692.

Ducos, P.
1978 *Tell-Mureybet: Étude archéozoologique et problèmes d'écologie humaine 1*, C.N.R.S., Paris.

Hillman, G.
1975 Appendix A. The Plant Remains from Tell Abu Hureyra: A Preliminary Report, *P.P.S.* 41, pp. 70–73.

Hole, F.
1983 4: The Jarmo Chipped Stone, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 233–284.

Howe, B.
1983 1: Karim Shahir, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 23–154.

Inizan, M.-L., Roche, H. and J. Tixier
1992 *Technology of Knapped Stone*, CREP, Meudon.

Kozlowski, S.K.
1990 Appendix-3. Microwear Study, *Nemrik 9: Pre-pottery Neolithic Site in Iraq (General Report: Seasons 1985–1986)*, edited by S.K. Kozlowski, Warsaw University Press, Warsaw, pp. 177–180.
1994 Chipped Neolithic Industries at the Eastern Wing of the Fertile Crescent, *Neolithic Chipped Stone Industries of the Fertile Crescent*, edited by H.G. Gebel and S.K. Kozlowski, *ex oriente*, Berlin, pp. 143–171.

Kozlowski, S.K. and A. Kempisty
1990 Architecture of the Pre-pottery Neolithic Settlement in Nemrik, Iraq, *World Archaeology* 21–3, pp. 348–362.

Kozlowski, S.K. and R.F. Mazurowski
1990 VII. Miscellanea, *Nemrik 9: Pre-pottery Neolithic Site in Iraq (General Report: Seasons 1985–1986)*, edited by S.K. Kozlowski, Warsaw University Press, Warsaw, pp. 145–154.

Kozlowski, S.K. and K. Szymczak
1990 IV. Flint Industry, *Nemrik 9: Pre-pottery Neolithic Site in Iraq (General Report: Seasons 1985–1986)*, edited by S.K. Kozlowski, Warsaw University Press, Warsaw, pp. 59–103.

Lasota-Moskalewska, A.
1994 Animal Remains from Nemrik, A Pre-pottery Neolithic Site in Iraq, *Nemrik 9: Pre-pottery Neolithic Site in Iraq, Vol. 4: Animal Remains*, edited by A. Lasota-Moskalewska, Warsaw University Press, Warsaw, pp. 5–52.

Legge, A.J.
1975 Appendix B. The Fauna of Tell Abu Hureyra: Preliminary Analysis. *P.P.S.* 41, pp. 74–77.

Mazurowski, R.F.
1990a V. Ground Stone Industry, *Nemrik 9: Pre-pottery Neolithic Site in Iraq (General Report: Seasons 1985–1986)*, edited by S.K. Kozlowski, Warsaw University Press, Warsaw, pp. 105–139.
1990b VI. Stone Vessels, *Nemrik 9: Pre-pottery Neolithic Site in Iraq (General Report: Seasons 1985–1986)*, edited by S.K. Kozlowski, Warsaw University Press, Warsaw, pp. 141–144.

Mellaart, J.
1965 *Earliest Civilizations of the Near East*, Thames and Hudson, London.

Moore, A.M.T.
1975 The Excavation of Tell Abu Hureyra in Syria: A Preliminary Report, *P.P.S.* 41, pp. 50–69.

Ohnuma, K.
1993 Experimental Studies in the Determination of Manners of Micro-blade Detachment, *al-Rāfidān* 14, pp. 153–181.

Ohnuma, K. and K. Matsumoto
1988 Lithic Artifacts from Level 6 of Tell Der Hall, Eski-Mosul (Iraq): A Preliminary Report, *al-Rāfidān* 9, pp. 73–89.

Olszewski, D.
1986 *The North Syrian Late Epipaleolithic*, BAR International Series 309, Oxford.

Payne, J. C.
1983 Appendix C: The Flint Industries of Jericho, *Excavations at Jericho, Volume 5*, edited by K.M. Kenyon and T.A. Holland, British School of Archaeology in Jerusalem, pp. 622–759.

Pelegrin, J.
1984 Débitage par pression sur silex: nouvelles expérimentations, *Préhistoire de la pierre taillée* 2, CREP, Meudon, pp. 117–127.

Quintero, L.A. and P.J. Wilke
1995 Evolution and Economic Significance of Naviform Core-and-Blade Technology in the Southern Levant, *Paléorient* 21–1, pp. 17–33.

Solecki, R.L.
1981 *An Early Village Site at Zawi Chemi Shanidar*, Bibliotheca Mesopotamica, Vol. 13, Undena Publications, Malib.

Stampfli, H.R.
1983 9: The Fauna of Jarmo, with Notes on Animal Bones from Matarrah, the 'Amuq, and Karim Shahir, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 431–483.

Turnbull, P.F.
1983 22: The Faunal Remains from M'lefaat, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 693–695.

Wada, H.
1987 Byblos Points and Jericho Points: Their Appearance, Development and Diffusion, *Bulletin of the Okayama Orient Museum* 6, pp. 1–45.

Watkins, T., Betts, A., Dobney, K., Nesbitt, M., Gale, R. and T. Molleson
1991 *Qermez Dere, Tel Afar: Interim Report No. 2, 1989*, Project Paper No. 13, Department of Archaeology, University of Edinburgh.

Watson, P.J.
1983 12: A Note on the Jarmo Plant Remains, *Prehistoric Archeology along the Zagros Flanks*, edited by L.S. Braidwood, R.J. Braidwood, B. Howe, C.A. Reed and P.J. Watson, Vol. 105 of the University of Chicago Oriental Institute Publications, Chicago, pp. 501–503.

Wilke, P.J. and L.A. Quintero
1994 Naviform Core-and-Blade Technology: Assemblage Character as Determined by Replicative Experiments, *Neolithic Chipped Stone Industries of the Fertile Crescent*, edited by H.G. Gebel and S.K. Kozlowski, *ex oriente*, Berlin, pp. 33–60.

van Zeist, W. and J.A.H. Bakker-Heeres
1986 Archaeobotanical Studies in the Levant: 3. Late-Palaeolithic Mureybit, *Palaeohistoria* 26, pp. 171–199.

NEOLITHIC SICKLE ELEMENTS FROM THE BALIKH VALLEY, NORTH SYRIA

Yoshihiro NISHIAKI*

Introduction

Sickle elements, believed to have been used for cutting plants, represent one of the most common tool types of the Near Eastern Neolithic. Numerous studies have been devoted to them from a number of viewpoints, notably in connection with the study of the origins and development of agriculture and early farming communities. This paper focuses on one of the less explored subjects, the manufacturing technologies of sickle elements. With reference to the material from Tell Damishliyya, North Syria, two aspects of the technology of sickle elements will be examined: one is the manufacturing methods of sickle elements themselves, and the other is concerned with hafting techniques. The material presented here was obtained from the final Pre-Pottery Neolithic to the early Pottery Neolithic levels. The chronological change of sickles in this time period will also be discussed.

It is my great honor to give this paper on the occasion of the commemoration of Professor Hideo Fujii's continuous and innovative contribution to the archaeology of Mesopotamia.

Excavations at Tell Damishliyya

Tell Damishliyya is one of numerous prehistoric sites discovered by the University of Amsterdam mission's survey in the Balikh valley (Akkermans 1990). It is a small mound on the west bank of Balikh, about 60 km north of Raqqa (Fig. 1: 9). The mound covers an area of about 70 × 60 m, with a height of 5 to 6 m, and is situated on a protruding remnant of a terrace. Details of the 1984 excavation have been published in Akkermans (1988). The excavated areas consist of two 10 × 10 m squares and four narrow trenches 1.5 m wide stretching over five squares. Excavation exposed seven successive stratified Neolithic deposits from the earliest Stratum 1 to the latest Stratum 7, each containing part of mud-walled buildings. Bedrock was not reached in either of the two areas. In the uppermost deposits, a remarkably large pit with a diameter of about 15 m was found which the excavator suggests can be assigned to the later Neolithic phase, perhaps to Strata 5–7. The use of this pit is as yet unknown, although Akkermans (1988) notes its similarity to modern quarry pits used to exploit mud for building material.

Archaeological objects collected from the Neolithic strata include various pieces common to this period: flint/obsidian artifacts, shards, bone tools, ground and grinding stone tools, stone vessels, clay objects, stone beads and so on. The shards which were found in the later five strata only, were most numerous in the latest strata (Stratum 7 and Pit; Table 3 in Akkermans 1988). The typological characteristics closely resemble those of the shards from Tell Assouad, a nearby mound excavated by J. Cauvin (1972) in 1970 and 1971. The two earliest strata (Strata 1 and 2) were entirely aceramic, and have therefore been ascribed to the Pre-Pottery Neolithic. Three radio-carbon dates from later strata (5970±110BC, 5720±60BC, and 5750±90BC) and the absence of a break in the stratigraphic sequence led Akkermans (1990: 116; 1991) to suggest that a gradual transition took place from the Pre-Pottery (his Balikh I) to the early Pottery Neolithic (Balikh IIA) at Damishliyya, at around 6000BC.

A collection of nearly one thousand lithic artifacts, including 759 flints and 80 obsidian pieces from in-situ contexts, was available for this study. The techno-typological descriptions have been presented

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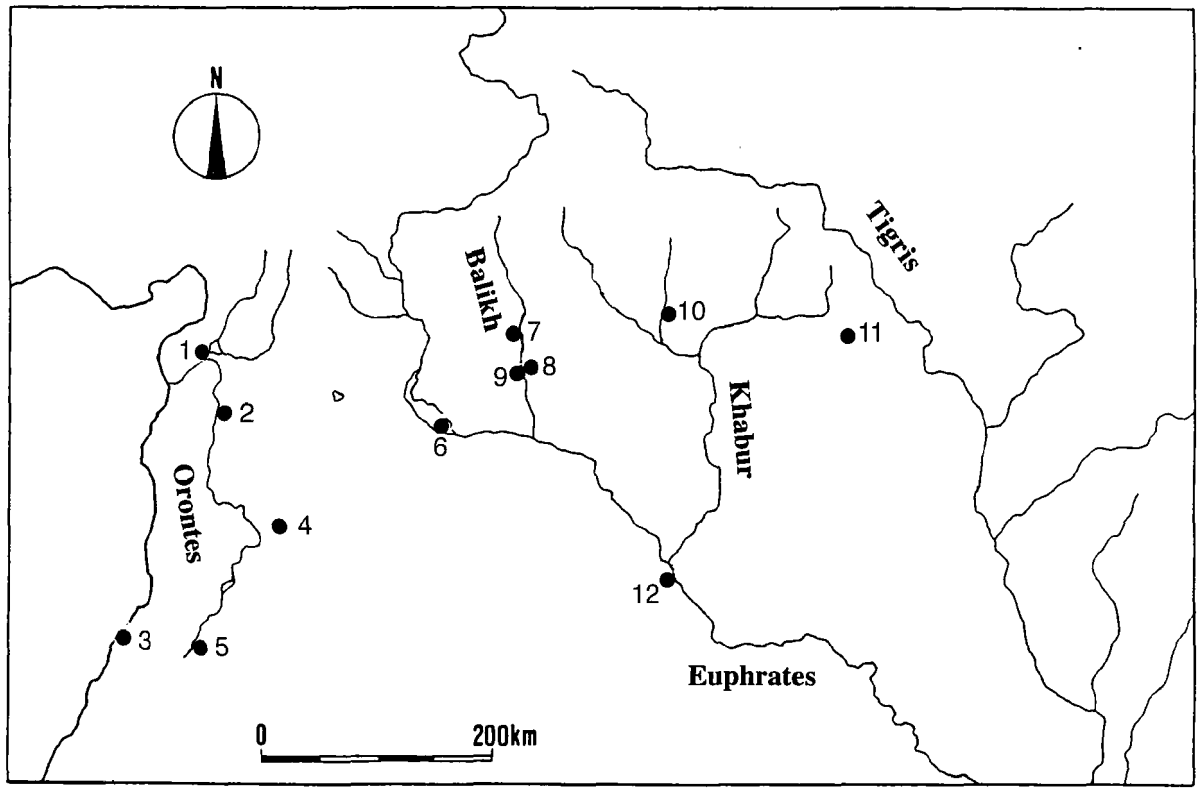

Fig. 1 Map showing Neolithic sites mentioned in the text. 1: Amuq basin sites, 2: El-Rouj basin sites, 3: Byblos, 4: Apamée, 5: Tell Nebi Mend, 6: Tell Abu Hureyra, 7: Tell Assouad, 8: Tell Sabi Abyad I, II, 9: Tell Damishliyya, 10: Tell Kashkashok II, 11: Telul eth-Thalathat II, 12: Tell Bouqras.

in detail elsewhere (Nishiaki 1992, 1993a). Since the analysis shows little inter-stratum variability, all the artifacts from different archaeological levels are treated together in the following analysis.

Sickle elements from Tell Damishliyya

The flint collection from Damishliyya contains 241 retouched tools and 40 retouch spalls. Most common are burins comprising nearly one third of the total tools (32.8%), followed by sickle elements which form about one fifth of the total (22.0%). The 40 retouch spalls are all from burin manufacture. Other tool classes which are rather rare, include retouched flakes (12.9%), retouched blades (8.7%), scrapers (5.8%), and notches (4.2%). There are only six tanged points forming less than 3% of the tool assemblage (2.5%). Obsidian artifacts include 20 retouched pieces, of which nearly half are corner-thinned blades (8/20 or 40.0%). The remainder are miscellaneous retouched/ edge-damaged blades, a notched blade, a splintered piece and so on. These blade tools, especially corner-thinned blades, could have been used as sickle elements (Nishiaki 1990), but the present study will concentrate on flint sickles alone.

The sickle element is usually defined in terms of function; it is identified by sickle gloss resulting from its use for cutting plants. However, in the course of the recent development of microwear studies, it has become clear that pieces without gloss visible to the naked eye may also have been used as sickle elements (Unger-Hamilton 1988). Accordingly, pieces displaying morphological similarities to those with visible gloss should also be considered as sickle elements, hence shape-defined sickle elements (Copeland and Verhoeven 1995). In the Damishliyya collection, forty five sickle elements with gloss and eight shape-defined ones are present.

(1) Manufacture of sickle elements

The sickle elements from Damishliyya, excluding three badly preserved ones, can be classified into

three different types on morphological grounds.

Type 1: Crescent-shaped sickle-elements (Fig. 2: 1–4; 40 pieces). These represent the most popular type at Damishliyya, amounting to 80% (40/50) of the classifiable sickle elements. The side opposite the working edge is steeply retouched to produce a curved back. All eight examples of shape-defined sickle-elements belong to this type (Fig. 2: 4).

Flakes (27/40 or 67.5%) were preferred as blanks to blades (13/40 or 32.5%). Partially cortical pieces were not uncommon but no entirely cortical flakes were used (Table 1). Metric data are presented in Table 2. Pieces between 30 and 35 mm long and 15 and 20 mm wide are most common. Dorsal scar patterns on the blanks are mainly unidirectional, originating from the proximal end. The bi-directional pattern is very rare, implying that the double-platform core technology of the Naviform type was not employed for blank production.

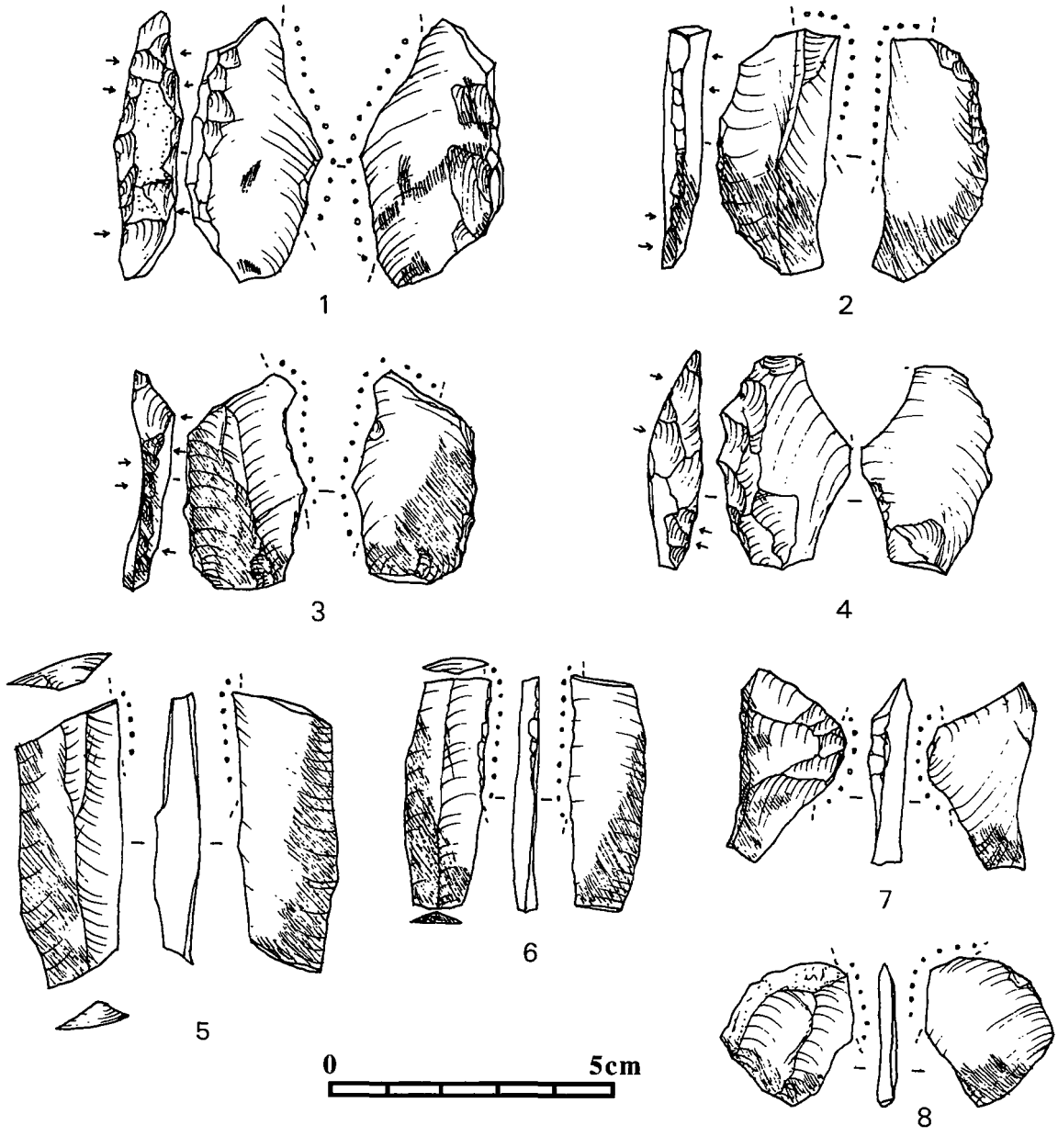

Fig. 2 Sickle elements from Tell Damishliyya. 1–3: Type 1, 4: Shape-defined sickle element of Type 1, 5, 6: Type 2, 7, 8: Type 3.

Table 1 Blank types of sickle elements from Tell Damishliyya (%).

	Part-cortical blades	Blades	Cortical flakes	Part-cortical flakes	Flakes	Total
Type 1	6 (15.0)	7 (17.5)	0 (0.0)	7 (17.5)	20 (50.0)	40 (100.0)
Type 2	0 (0.0)	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (100.0)
Type 3	2 (40.0)	0 (0.0)	0 (0.0)	2 (40.0)	1 (20.0)	5 (100.0)
Total	8 (16.0)	12 (24.0)	0 (0.0)	9 (18.0)	21 (42.0)	50 (100.0)

Backing retouch was made mostly from the ventral surface (27/40 or 67.5%), but bifacial retouch is also evident in some cases (11/40 or 27.5%), and inverse retouch was occasionally applied (2/40 or 5.0%). Most probably, retouch was achieved by direct percussion. No clear bias can be detected in the selection of an edge to be retouched; the frequency of retouch on the left (22/40 or 55.0%) and the right (18/40 or 45.0%) edges is almost equal.

Working edges were rarely retouched although about one quarter do exhibit some retouch scars, but these could in fact represent utilization damage. No definite intentional retouch such as denticulation is found along the edges.

Type 2: Elongated blade segments (Fig. 2: 5, 6; 5 pieces). These sickle elements have more or less parallel lateral edges, manifesting the use of more controlled flaking in blank production. No intensive retouch such as backing was made to their edges. One or both ends were truncated.

Type 2 blanks were by definition exclusively blades, on which no cortex was left. Length and width are between 26 and 49 mm, and between 12 and 18 mm respectively (Table 2). Type 2 sickle elements are generally longer than Type 1 pieces. The dorsal scar pattern is again predominantly unidirectional. The distal or proximal ends of the blades were truncated by the snapped truncation method, leaving no clear positive or negative bulbs on the surface. Side-blow and burin-blow truncations were not utilized.

Type 3: Unmodified sickle elements (Fig. 2: 7, 8; 5 pieces). These pieces are unretouched flakes and blades which exhibit sickle-gloss. The shape varies from oval to more or less crescent, and from flake to blade (Table 1). Blank forms and the general size of Type 3 pieces are quite similar to those of Type 1 (Table 2).

Table 2 Measurements of sickle elements from Tell Damishliyya (mm).

		No.	Mean	S.D.	Min.	Max.	Median
Type 1	Length	40	32.73	7.278	16	53	33
	Width	40	18.23	3.574	12	25	17
	Thickness	40	6.774	2.345	2.6	12.0	6.95
	L/W	40	1.851	0.506	0.875	2.250	1.799
	W/T	40	2.954	0.875	1.768	5.600	2.707
Type 2	Length	5	N.A.	N.A.	26	49	41
	Width	5	N.A.	N.A.	12	18	15.5
	Thickness	5	N.A.	N.A.	2.4	8.1	3.9
	L/W	5	N.A.	N.A.	1.444	3.154	2.769
	W/T	5	N.A.	N.A.	2.099	5.042	3.939
Type 3	Length	5	N.A.	N.A.	24	35	31
	Width	5	N.A.	N.A.	12	20	16
	Thickness	5	N.A.	N.A.	3.2	5.2	4.6
	L/W	5	N.A.	N.A.	1.250	2.458	1.789
	W/T	5	N.A.	N.A.	2.553	6.250	3.636

(2) Hafting

Sickle-elements from Damishliyya were almost undoubtedly used hafted, although a handle has not survived in the archaeological assemblages. Many of these pieces indeed retain clearly visible remains of adhesive substances (bitumen) on the part opposite to the working edge. M.-C. Cauvin (1973) has reconstructed a way of hafting the sickle elements excavated at Tell Assouad, the upper levels of which were contemporaneous to the occupations excavated at Damishliyya. Combining evidence on the location of sickle gloss and adhesive material, both visible on the sickle elements with the naked eye, she proposed that sickle elements of Tell Assouad were probably hafted obliquely in succession to a curved handle. In view of the close morphological and microwear similarity of sickle-elements from both sites, her reconstruction could be applied to the Damishliyya material as well (Nishiaki 1992).

Theoretically, at least two possible types can be distinguished depending on the location of sickle gloss and adhesive materials, as illustrated in Fig. 3. In Type A traces of gloss and hafting are oblique to the longitudinal axis of the element, while in Type B they are parallel. The sickle elements from Damishliyya are exclusively of Type A, identical to those reported from Tell Assouad. Although our Type 2 sickle elements are clearly morphologically different from Types 1 and 3, the distribution of gloss-bitumen traces is the same, demonstrating that these pieces were also hafted in a similar way to the others.

On even closer examination, four subtypes of Type A can be identified based on the location of hafting traces and the direction of the blank (Types A1-A4; Fig. 3; cf. Fig. 3 in Fujii 1983). All the schematic sickle-elements in Fig. 3 are placed with their sickle gloss at the top. Types A1 and A2 exhibit gloss along the right edge when seen from the dorsal surface. The gloss is wider at the distal end on Type A1, and the opposite is the case on Type A2. Types A3 and A4 show gloss along the left edge. In Type A3 the gloss is wider at the distal end, while in A4 it is more extensive at the proximal end. These four subtypes represent the different directions in which each element was inserted into a handle. Types A1 and A2 were likely to have been hafted in the way shown as Type X in Fig. 3, and Types 3 and 4 were as Type Y. The left edge of a sickle element was inserted into a handle in Type X hafting, and the right edge in the case of Type Y hafting.

Table 3 presents the result of the application of this classification scheme to the sickle elements from Damishliyya. Types A1 and A2 evidently outnumber others, showing that Type X hafting was popular at Tell Damishliyya. It is not necessary, however, that all the elements of a single sickle were hafted in the same way. As indicated by the presence of a small number of Type 3 and 4 specimens, a single Type X sickle may have contained a few pieces inserted in the way of Type Y. Nevertheless, it should be emphasized that more than 80% of sickle elements were hafted in the same way, that is Type X hafting with their left edges in the handle; a strict regularity existed in the selection of the right-left direction of elements in the handle.

It appears however that the inhabitants did not worry about which end of a sickle element pointed toward the top or bottom as long as its dorsal surface faced up. No difference can be seen between the frequencies of A1 and A2, or those between A3 and A4 (Table 3).

Flint sickles of the Balikh Neolithic

The above analysis revealed that the technology of sickles at Damishliyya is characterized by the manufacture of crescent-shaped elements on flakes and their hafting in an oblique manner to a handle with bitumen. A few straight blades were also utilized as elements. Despite their distinct morphology however, those blades were probably hafted in the same way as the crescent-shaped flakes.

Two excavated assemblages from the Balikh valley are available for comparison: one from Tell Assouad (M.-C. Cauvin 1972, 1973), and the other from a recent excavation at Tell Sabi Abyad II by P.M.M.G. Akkermans (Copeland and Verhoeven 1995). Both sites produced late PPNB materials,

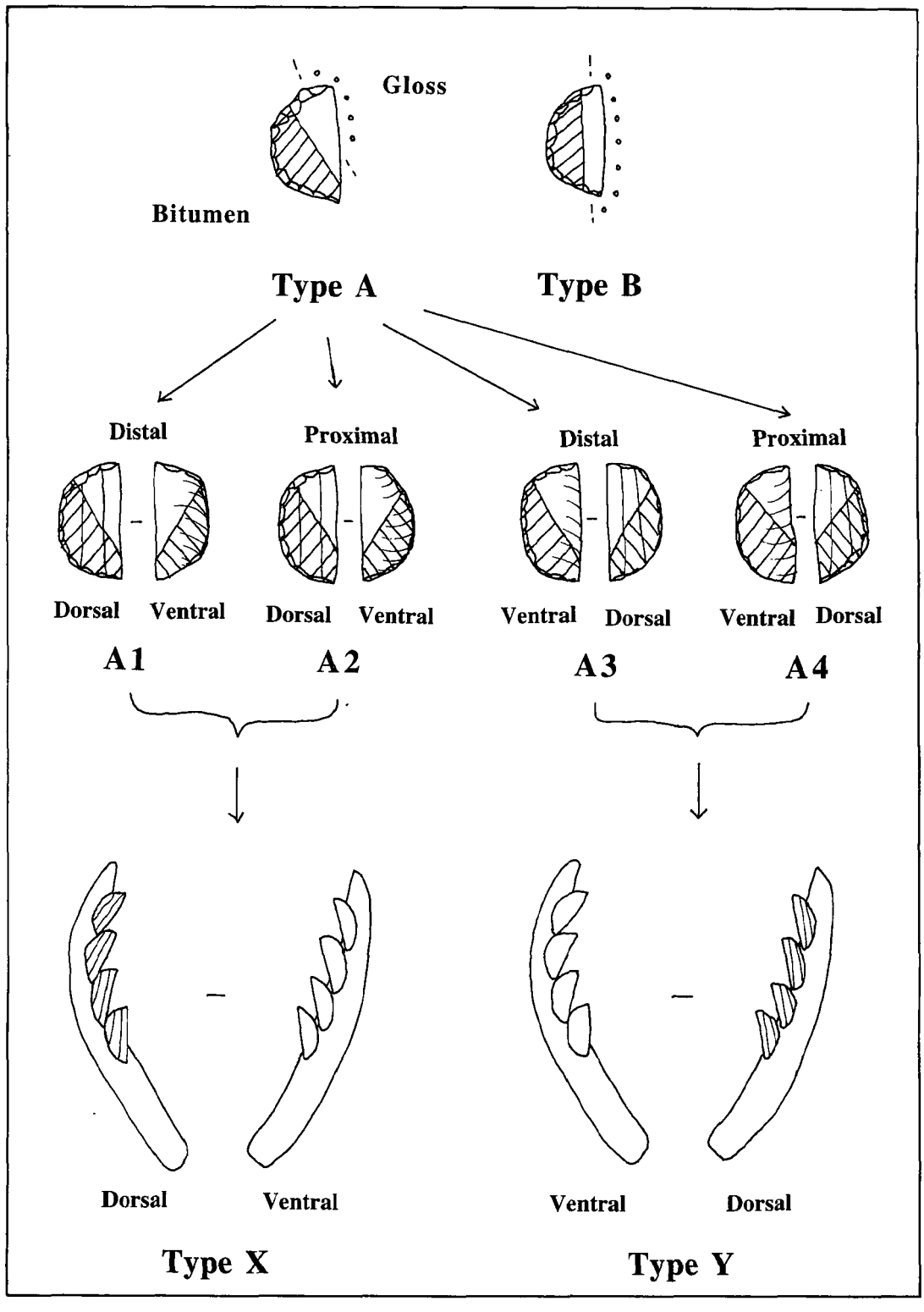

Fig. 3 Schematic presentation of gloss-bitumen patterns on sickle elements (Types A1 to A4) and the possible hafting methods (Types X and Y).

slightly earlier than the assemblages from Damishliyya, while Tell Assouad yielded early Pottery Neolithic assemblages as well. Comparison between these two sites and Damishliyya reveals an interesting pattern.

Table 3 Hafting types of sickle elements from Tell Damishliyya (%).

	Type X		Type Y		Total
	Type A1	Type A2	Type A3	Type A4	
Type 1*	14 (43.8)	12 (37.5)	3 (9.4)	3 (9.4)	32 (100.0)
Type 2	1 (20.0)	3 (60.0)	0 (0.0)	1 (20.0)	5 (100.0)
Type 3	1 (20.0)	4 (80.0)	0 (0.0)	0 (0.0)	5 (100.0)
Total	16 (38.1)	19 (45.2)	3 (7.1)	4 (9.5)	42 (100.0)

* excludes shape-defined sickle elements.

The morphological types of sickle elements defined at Damishliyya are basically shared by these two sites, but a few differences exit in technological details. Firstly, the crescent-shaped sickle elements (Type 1) from Assouad and Sabi Abyad II tend to be manufactured on blades rather than flakes as at Damishliyya. Secondly, the extent of retouch is limited and resembles truncation more than the backing that is common at Damishliyya. Copeland and Verhoeven (1995) write that the sickle elements from Sabi Abyad II rarely exhibit retouch. Thirdly, sickle elements on unmodified blade segments (Type 2), of which a few were recovered only from earlier levels at Damishliyya, seem to have been more common at Assouad and Sabi Abyad II. These differences are most likely a reflection of the collections from Tell Assouad and Tell Sabi Abyad II which contain materials earlier than those from Tell Damishliyya. In other words, they indicate chronological changes in the habit of sickle element manufacture; it appears that the co-use of Type 1 and 2 blade sickle elements in the late PPNB was gradually replaced in the early Pottery Neolithic by the dominant use of Type 1 sickle elements made on flakes.

Despite these differences in manufacturing techniques, the manner of hafting sickle elements appears to have remained generally unchanged in this time period. The way of hafting reconstructed at Damishliyya is, as demonstrated in the previous section, entirely comparable to that at Tell Assouad and at Sabi Abyad II. Even details such as the dorsal/ventral and the right/ left direction of elements against the handle wholly match each other. According to the drawings of M.-C. Cauvin (1973) and Copeland and Verhoeven (1995), Type A1 and A2 sickle elements with gloss, and Type X hafting were also popular at Assouad and Sabi Abyad II. This striking similarity in sickle manufacturing over several hundred years reinforces the uninterrupted cultural transition that occurred from the late Pre-Pottery to the early Pottery Neolithic in the Balikh valley. It should be noted, however, that a different hafting method seems to have been practiced occasionally in the earlier periods. Sickle elements collected at Tell Assouad contained a small number of pieces exhibiting Type B sickle gloss (Fig. 5.19: 7, 8 in Nishiaki 1992), hinting at the use of parallel hafting (Type B) as well. This may indicate that the mixed use of oblique and parallel types of hafting was rather common in the earlier late PPNB.

The oblique hafting of crescent-shaped sickle elements came into popular use in the Balikh during the late PPNB becoming dominant by the beginning of the Pottery Neolithic. Examination of the published drawings shows that a similar method was also practiced in other areas of Syria, for example, at the Amuq plain sites (Braidwood and Braidwood 1960), Tell Apamée (Otte 1976) and the el-Rouji basin sites of Northwest Syria (Iwasaki et al. 1995). At these sites crescent-shaped sickle elements and small blades were both put to use, and it is almost certain that at least the former include pieces hafted in the same way as at the Balikh sites. On the middle Euphrates, similar sickle elements have been reported from the late PPNB levels of Tell Abu Hureyra (Moore 1975). In the lower valley, the late to final Pre-Pottery Neolithic levels of Tell Bouqras produced similar specimens, consisting of crescent-shaped elements on blades (our Type 1) and long truncation blades (Type 2; Roodenberg 1986). The latter are far more common at Bouqras (39/53 or 73.6%), confirming the chronological trend conjectured from the comparison between Tell Assouad and Tell Sabi Abyad, and Tell Damishliyya.

Crescent-shaped sickle elements were thus quite commonly manufactured in the north Syrian region. On the other hand in the Khabur basin, eastern Syria, flint sickles themselves were apparently not very common. Instead sickle elements made of obsidian may have been more popular in this region. Corner-thinned blades, although without visible gloss due to the nature of obsidian, are possible candidates as sickle elements in this region. Their morphology and manufacturing technology differ considerably from crescent-shaped elements, but the method of hafting was probably similar to that popular at the Balikh sites (Nishiaki 1990). In southwestern Syria, another type of sickle element was commonly used at the beginning of the Pottery Neolithic. Small blades with fine denticulation along the edges seem to be more common, as illustrated by examples from Tell Nebi Mend and Byblos (Nishiaki 1992). Moreover, the parallel method of hafting which was used was radically different.

From this short review of the literature we may conclude that sickle elements of the late PPNB to the early Pottery Neolithic are characterized by their regional diversity. Simple sickle blades, made on large blades produced from Naviform cores during the earlier PPNB (M.-C. Cauvin 1983), were no longer popular by this period. They were replaced by a variety of localized types: the elements were either crescent-shaped flakes in North Syria, small denticulated blade segments in West Syria, or imported obsidian blades in the northeastern region. The flowering of such regional traditions in sickle element technology probably reflects the larger cultural change that was in progress, when the relatively uniform PPNB culture collapsed in a number of spheres (Nishiaki 1993b). The regional diversity of sickle technology could reflect the result of population growth, increased sedentism and more intensive adaptation to regionally specific raw material environments, as well as the preceding local traditions.

In the regional perspective of the Balikh, the particular sickle of the early Pottery Neolithic appears to have been passed onto the next stage, or the Pre-Halaf and early Halaf periods. The lithic analysis by Copeland (1989) at Tell Sabi Abyad I confirms that the techno-typology of the middle to late sixth millennium BC levels shows a general similarity to that of Damishliyya, such as in flake production methods and flake tool types. Particularly, sickle elements used at Sabi Abyad I include precisely the same type in both manufacturing and perhaps hafting methods as defined at Damishliyya. Our Type 1 sickle elements with sickle-gloss Type A were, along with new elements, still used in the middle to late 6th millennium contexts at Sabi Abyad I (Fig. VII.6: 5-7 in Copeland 1989). This way of hafting (Type X) seems to be an important cultural trait of the late prehistory of northern Syria.

This particular method of hafting appears to have come into popular use in northern Mesopotamia during the Ubaid period. Recent re-examination of Ubaid sickle elements from Telul eth-Thalathat II, in northern Iraq, clearly demonstrates the prevalent use of Type X sickles in the Ubaid 3 period (Nishiaki 1994). The significance of the widespread occurrences of this method in the Chalcolithic period is as yet unknown. Was it diffused from the northern Syria? If so, we may consider that one of the factors relating to the background of the region was the possible continuous contacts between northern Syria and Mesopotamia through trade of raw materials, including bitumen which was probably imported from Mesopotamia to the Balikh (Copeland and Verhoeven 1995).

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References

Akkermans, P.M.M.G.

1988 The soundings at Tell Damishliyya. In: *Hammam et-Turkman I*, edited by M.N. van Loon, pp. 19–67. Istanbul, NHAI.

1990 *Villages in the Steppe*. Amsterdam, Amsterdam University.

1991 New radiocarbon dates for the later Neolithic of Northern Syria. *Paléorient* 17(1): 121–5.

Braidwood, R. and L. Braidwood
1960 *Excavations in the Plains of Antioch I.* Chicago, Oriental Institute of University of Chicago.

Cauvin, J.
1972 Sondage à Tell Assouad (Djézireh, Syrie). *Annales Archéologiques Arabes Syriennes* 22: 85–88.

Cauvin, M.-C.
1972 Note préliminaire sur l'outillage lithique de Tell Assouad (Djézireh). *Annales Archéologiques Arabes Syriennes* 22: 90–4, 102–3.
1973 Problémes d'emmanchement des faucilles du Proche Orient: les documents de Tell Assouad (Djézireh, Syrie). *Paléorient* 1: 101–6.
1983 Les faucilles préhistoriques du Proche Orient: données morphologiques et fonctionnelles. *Paléorient* 9(1): 63–79.

Copeland, L.
1989 The flint and obsidian artifacts of Tell Sabi Abyad. In: *Excavations at Tell Sabi Abyad*, edited by P.M.M.G. Akkermans, pp. 237–270. BAR, Oxford.

Copeland, L. and M. Verhoeven
1995 Bitumen-coated sickle-blade elements at Tell Sabi Abyad II, Northern Syria. Paper distributed at the *Workshops on PPN Chipped Lithic Industries (II).* Warsaw, Warsaw University.

Fujii, S.
1983 Classification of the mounting types of sickle blades. *Bulletin of the Ancient Orient Museum* 3: 129–152 (in Japanese).

Iwasaki, T., H. Nishino and A. Tsuneki
1995 The prehistory of the Rouj basin, northwest Syria: a preliminary report. *Anatolica* 21: 143–187.

Moore, A.M.T.
1975 The excavations of Tell Abu Hureyra in Syria: a preliminary report. *Proceedings of the Prehistoric Society* 41: 50–77.

Nishiaki, Y.
1990 Corner-thinned blades: a new obsidian tool type from a pottery Neolithic mound in the Khabur basin Syria. *Bulletin of the American Schools of Oriental Research* 280: 1–14.
1992 *Lithic Technology of Neolithic Syria.* Ph.D. Dissertation, London University.
1993a Notes on the Neolithic stone artifacts from Tell Damishliyya, Balikh valley, Syria. *Archiv für Orientforchung* 40/41: 301–303.
1993b Lithic analysis and cultural change in the late Pre-Pottery Neolithic of North Syria. *Anthropological Science* 101(1): 91–109.
1994 Re-examination of the flaked stone artifacts from Telul eth-Thalathat II, Iraq. *Bulletin of the Society for Near Eastern Studies in Japan* 37(2): 247–248 (in Japanese).

Otte, M.
1976 Donnée nouvelles sur le Néolithique d'Apamée (Sondage A4). *Annales Archéologiques Arabes Syriennes* 26: 101–118.

Roodenberg, J.J.
1986 *Le Mobilier en Pierre de Bouqras.* Istanbul, NHAI.

Unger-Hamilton, R.
1988 *Method in Microwear Analysis: Prehistoric Sickles and Other Stone Tools from Arjoune, Syria.* BAR, Oxford.

THE HALAF CULTURE: PECULIARITIES OF THE V MIL. B.C. NORTH MESOPOTAMIAN ARCHITECTURE

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Among Early Agricultural cultures of North Mesopotamia and the whole Near East, the Halaf culture dated to the V mil. B.C. (by traditional chronology) is one of the brightest. This culture replaced the famous Hassuna one and covered the vast area–from the Tigris basin up to the right bank of the Euphrates. Finds of typical Halaf ceramics are known right up to North-West Iran, Transcaucasus in the East, and in the West at Ras Shamr and other settlements of East Mediterranean.

Ceramics, varied in shape with rich painting decoration, and specificly roundish-planned architecture are the most prominent peculiarities of this culture that essentially differentiate it from the Hassuna one preceding it in North Mesopotamia as well as from other West Asian cultures of the period in question. In particular, it seems to be beyond questions that this culture, spreading over Near East, caused notable innovations in the architectural tradition; these innovations are manifested in dwelling, household and even cult structures in terms of plan having newly come into being in North Mesopotamia in principle. Really, instead of multi-roomed rectangular houses typical for the Hassuna culture, those which were one-roomed and roundish tholos type and had adjoining rectangular structures became the predominant architectural form in North Mesopotamia in the Halaf period.

Questions of reconstruction of the tholos-type structures and their purpose (dwelling, household, cult) as well as question of the origin of this architectural form have attracted the attention right after the excavations of Tell Arpachiayah in Mosul region, where those structural remains were uncovered for the first time [Malowan, Gruikshank Rose 1935: pl. I-II]. Although quite a great number of the V mil. B.C. settlements have been investigated in Mesopotamia since that time, the questions mentioned above as well as the problem of the Halaf cultural phenomenon still remain to be discussed and are far from being studied in all of their aspects, let alone the final solution [Lloyd, Muller, Martin 1972; Merpert, Munchaev 1973; 1987; Мунчаев, Мерперт 1981; Aurenche 1981; Seeden 1982; Kubba 1987; Akkermans 1989; 1990; etc.]. Roundish-planned structural remains side by side with those, rectangular in plan, are known all over the Halaf culture area– in the East (Tell Arpachiyah, Tepe Gawra, Nuzi, etc.), in the North (Girihacijan) and in the West (Chagar Bazar, Younus, Turlu, Shams ed-Din Tannira, Tell Sabi Abyad, Khirbet esh-Shenef, etc.).

Unfortunately, there is a great disproportion in which Halaf culture settlements are studied. In the eastern part of that culture area, Tell Arpachiyah where small-scaled excavations were conducted recently in the 70th [Hijara 1978; 1980] remains to be the monument most investigated. The best-excavated sites in the West, the Euphrates basin, are Shams ed-Din Tannira and, especially, Tell Sabi Abyad [Radi, Seeden 1980; Akkermans 1990]. Of settlements investigated in the Halaf culture northern periphery, Girikihaciyan in South-East Turkey is to be pointed out [Watson, Le Blanc 1990]. Among those revealed to the South of Ninevia, let us mention Songor B settlement that was excavated under H. Fujii's direction [Matsumoto, Yokoyama 1995].

However, it is beyond doubt that to date the Halaf settlement at Yarimtepe II was investigated on the greatest scale. The settlement in question is located in Sinjar valley. There are thick levels of that culture here, rich in architectural remains. In terms of the above illustration points, the quantity of various structural remains unearthed here considerably exceed those which have been uncovered at any

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other Halaf settlements to this day. Suffice it to mention that remains of more than 75 tholos-type structures were investigated at Yarimtepe II–more than all from other settlements of the Halaf culture. It seems that we would have much clearer important information now if, for instance, such settlements as Tell Arpachiayh and Tell Sabi Abyad layers of the Halaf period had been opened wider from their narrow trenches, like at Yarimtepe II where the most ancient layers were excavated down to the virgin soil in the unit area of 500 sq. m. That surely could make us possible to know of what type was the earliest dwelling and household structures of the settlement under examination as well as the genesis and evolution of the settlement's architecture through the whole period it existed.

As we can see, the importance of Yarimtepe II in the V mil. B.C. North Mesopotamian architecture and the Halaf culture in general study is extremely great. Though the reports on Yarimtepe II excavations and some papers concerning the settlement on the whole were published permanently, there is still not a general concept in the architectural evolution of that settlement which would demonstrate, as we suppose, the complete way of the Halaf culture development, from its appearance in Mesopotamia up to acculturation with the Ubaid one. The aim of the paper presented here is to fill in that gap to some degree and to contribute to more profound study of the North Mesopotamian Halaf architecture in its peculiarities and genesis.

Yarimtepe II is one of six tells known under this name which are situated on Djoubara Diariasi brook, 7 km of Telafar town in Sinjar valley, North-West Iraq [Мунчаев, Мерперт 1981: Fig. 2]. The settlements of Yarimtepe I (the Hassuna culture), Yarimtepe II (the Halaf culture) and Yarimtepe III (the Halaf and Ubaid cultures) were excavated. The excavations at Yarimtepe II were conducted in 1969–1976. A propos, Prof. H. Fujii visited Yarimtepe twice in these years.

The settlement in question is located on the right bank of Joubara Dariasi brook which destroyed a half of it (that gave the name Tell-"Yarimtepe" meaning "Half hill"). To the North, the tell practically gets close to Yarimtepe III, and here in the Halaf layer architectural remains comprising roundish-planned structures of a high interest were uncovered as well. Probably, Yarimtepe II was originally roundish in outline. Its survived part was 120 m long (N-S) and 25-40 m wide. A 600 sq. m trench was opened here, and the virgin soil was reached in the area of 500 sq. m. In the archaeological layer, 7 m thick, 9 building levels were revealed–all of them belong to the Halaf culture with Hassuna sherds found in the southern part of the trench near the virgin soil, but without any regular layer of that period traced. The upper part of the layer, especially levels 1–2, was heavily damaged by burials and pits of later period.

At Yarimtepe II, the architectural remains were unearthed in all levels. From the 4th level downward they were in a good state of preservation. Dense building from the most ancient period is a characteristic feature of the settlement part excavated. Remains of dwelling structures and of various household structures–storages for grain and other foods and various ovens including ceramic kilns–were uncovered in all levels of the archaeological layer. Definitely, the roundish one-roomed house type of tholos with cupolla-shaped or, rarely, flat roof was the basic form in dwelling architecture through the all periods of the settlement. Indeed, such house remains, sometimes with an oven inside, were uncovered at every building level. Their diametre ranges from 3.5 to 5.5 m. Only in several cases, one can argue that the remains of rectangular structures belonged to dwelling houses.

On the contrary, household structures were both roundish and rectangular in plan (Fig. 1). These roundish structures, 1.5-2 m in diametre on the average, had flat roofs. The rectangular structures are divided into two or more chambers, very often adjoining to a tholos from one or several sides. Elongated multi-chambered household structures that appear to have been used as granaries (Fig. 2) are a characteristic feature of the settlement at the early stages of its existence (levels VII-IX) [Мунчаев, Мерперт 1981: fig.45, 46; Merpert, Munchaev 1993a: fig. 8.8]. As far as I know, there are still no analogous structures revealed at other Halaf settlements. Remains of a great building complex with a multi-chambered tholos in the centre which served as a community warehouse–a granary–were uncovered



Fig. 1 Yarimtepe II. Household structures of roundish and rectangular plan.

at Yarimtepe II as well.

Numerous ovens, various cooking wares and ceramics form a substantial group of Yarimtepe II household structures. In particular, two-leveled massive kilns, quite complex in structure to dire vessels, started to be built here as early as the initial period of the settlement's existence.

Finally, there seem to have been special cult structures at Yarimtepe II. For instance, tholos 67–the biggest structure of roundish plan in the most ancient settlement level–was one of them. In the course of building that tholos a ritual act was made; several unique articles with the earliest metal (copper) seal among them were deliberately placed beneath its floor. Besides that, in a hole dug in the tholos floor were "buried" an original vessel with rich painting decoration (smashed) and microlithic tools of obsidian [Мунчаев, Мерперт 1981: Fig. 51; Merpert, Munchaev 1993a: 142]. No more such finds were brought to light anywhere else at Yarimtepe II. It is well known that in Mesopotamia the tradition to place non-ordinary articles beneath walls and floors of temples was widely practised in the following epochs. This tradition, as it has been established, has roots at least in the Hassuna period.

Thus, the architecture of Yarimtepe II is characterized by dwelling structure type of tholos and household structures, rectangular or roundish in plan. Remains of about 80 tholos-type structures were uncovered in different settlement levels, with the upper (II-III) down to the most ancient (IX) levels included. With this there are roundish structures for both dwelling and household in all levels.

Regarding the genesis of the Yarimtepe II architecture, one has to emphasize that no any substantial innovations took place in its evolution, let alone cardinal ones. After the settlement appearance up to its disappearance, there existed only one architectural form. No traces of Ubaid layer were discovered at Yarimtepe II, while at neighbouring Yarimtepe III, Halaf layer, 8 m thick, was overlaid by Ubaid layer, 4 m thick. There, we can clearly see the cardinal change of the architectural form with the beginning of the Ubaid culture–roundish structure type of tholoses were replaced by rectangular multi-roomed structures [Merpert, Munchaev 1993b: 163–206, 225–240]. As to innovations in the course of the Yarimptepe II architecture evolution, only some new elements in building could be mentioned. Exempli gratia, great tholoses of the most ancient levels had no any extentions, while there are seen such



Fig. 2 Yarimtepe II. Household structures (Level IX).

structures built, from one or several sides practically in all cases, to the dwelling of the upper levels.

Now, let us closely examine the question of the settlement planning on the basis of one of Yarimtepe II building levels. As is known, the data from Yarimtepe II lower levels (VIII-IX) including those on architecture [Мунчаев, Мерперт 1981: 161–197; Merpert, Munchaev 1987: 20–36] as well as those of several of upper ones [Merpert, Munchaev 1971a: 18–22; 1971b: 29–32; 1973: 108–113; Munchaev, Merpert 1973: 9–14; etc.] were published quite detailed. Therefore, the plan of the Yarimtepe II · VIth building level (Fig. 3) is presented here; it has not been published in complete way before.

It is the very dense building of this part of the settlement at the concrete stage of its being that attracts the attention in the first order. Neither in the previous periods nor in the following the area in question was not built in such a dense manner. In spite of this, a certain planning could be seen here quite clearly; building complexes are lined in the North-South direction, i.e. in the same way as in the earlier levels. Tholoses 42, 43 and 44 formed one row. Probably, there were more dwelling tholoses to the North and the South of them.

To the West of that row of roundish houses, tholoses 32 and 45 were located, forming one more row of dwelling structures lined in the same direction. A big original building complex with a multi-

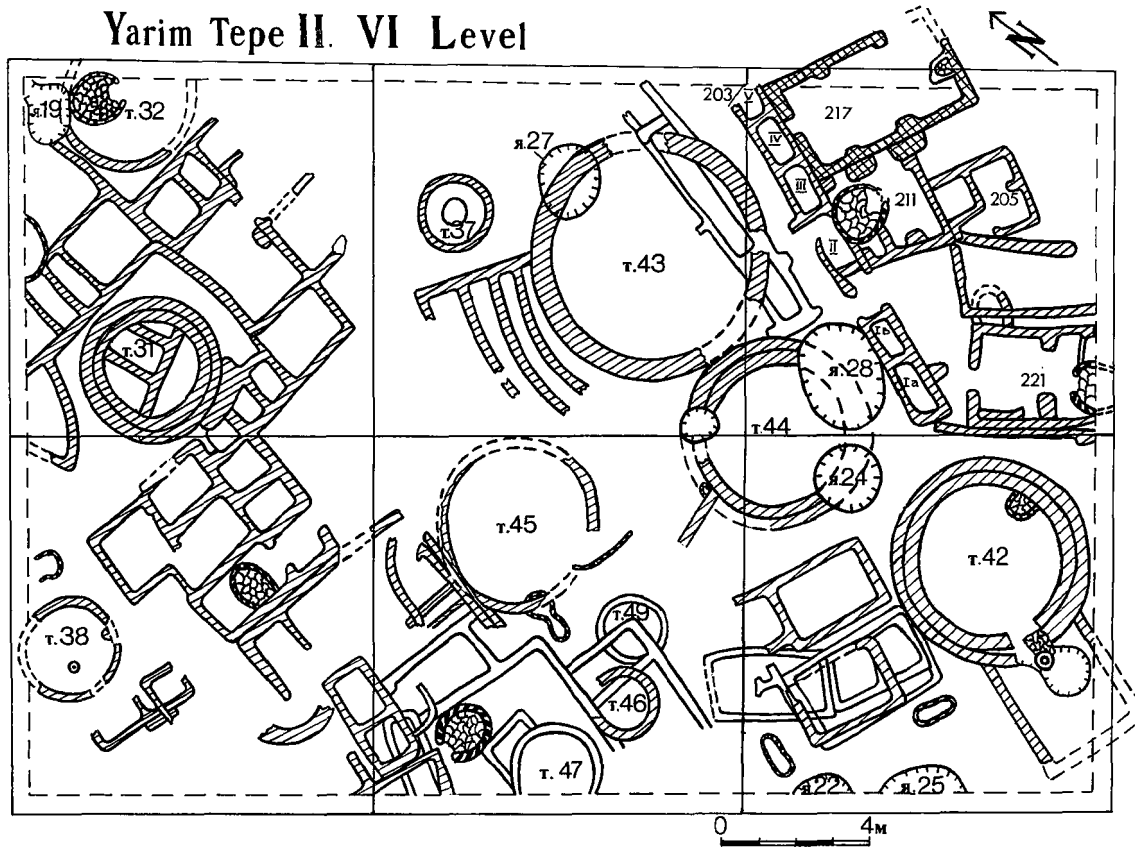

Fig. 3 Yarimtepe II. General plan of Level VI.

chambered tholos in the centre adjoined them.

There were remains of six more roundish structures (tholoses 31, 37, 46, 47, 49), smaller in measuring (excluding tholos 31). They were uncovered at different levels in the western part of the trench. Remains of a great number of household structures covering one another were also unearthed. More can be said about remains below, but let us turn now to some of the dwelling and household structures just mentioned.

The lower part of tholos 42 consisted of two walls, 0.4-0.75 m high (-3.95 to -4.7 m) and 0.7 m thick in total. The inner diametre at the floor level is 3.9-4 m, while 3.7-3.9 m at a height of 0.7 m. Hence, this tholos narrowed upwards and had a cupolla-shaped roof, probably with a lightning aperture at the top also serving as a chimney.

Tholos walls were built of clay layers, 5-6 cm thick, and were coated with clay plaster, 2.5 cm thick, on which traces of white washing by gyps survived. A floor was covered with the same daub as well. There was a small oven of roundish-rectangular form, type of brazier, built by the eastern sector of the wall (Fig. 4a). The tholos was entered by a doorway about 1.1 m wide in the wall's south sector. This doorway adjoined a structure, nearly rectangular in plan (ca. 1.6x1.65 m). And, remains of its western and eastern (partial) walls were unearthed near the tholos. So, the tholos in question consisted of two chambers–the main, dwelling, and the secondary (dromos) which was a kind of antechamber. Besides that, several rectangular household structures, one of them being two-chambered, were built to the West of tholos 42 at different stages of its being. Their walls of clay layers laid on the other, being preserved at a height ranging from 10 to 40 cm.

1.5 m to the North of tholos 42, there was another roundish house–tholos 44, the inner diametre of which is 3.6-3.7 m (Fig. 3) and the lower part of which consisted of two walls, 30-35 cm wide each. The

walls were built of clay mixed with adobe and coated with clay plaster. A floor was common–a tamped ground many times coated with clay containing gyps pieces.



Fig. 4a Yarimtepe II. Tholos 42.

Tholos 43, of which the inner diametre at the floor level is 5.6-5.65 m, was close to the structure discribed. A lot it was built on had a rough surface with heavy incline to the North. Because of this, a "foundation" took the shape of a massive rounded wall (0.6 m wide).

0.6-0.65 m high in its northern sector and 0.1-0.15 m high in the south, one had been built here before erecting the house. Its eastern sector "laid" on a narrow rectangular structure of the previous level. The space inside was filled in with clay to make a platform on which the tholos itself was erected. The house had a cupolla-shaped roof. A household structure of uncommon bow-shaped form which consisted of at least four narrow chambers was built on to the tholos from the West (Fig. 4b). The house location was not established as some sectors of its walls were destroyed by pits.

To the East of tholoses 42–44, there were several different structures. Probably, a narrow multi-chambered structure of rectangular plan (203) was built nearly simultaneously with tholos 43. A passage, 0.5 m wide, devided the structure into two parts–the southern with two chambers and

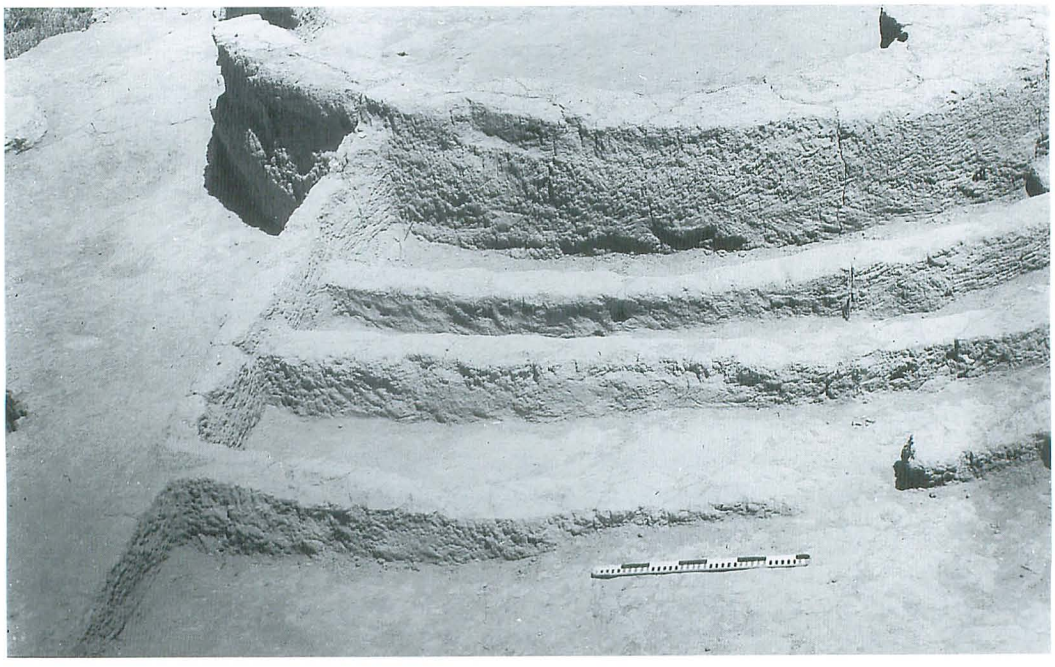

Fig. 4b Yarimtepe II. Tholos 43.

the northern with five chambers (Fig. 3). Their clay floors had rough surfaces. Chamber's infill consisted of loam, ash, a lot of animal bones and sherds. Not a shadow of doubt, this structure was household, analogous to those excavated in the settlement's earlier levels. A propos, there were no structures like that in the upper levels (V-II).

The eastern lengthwise wall of the structure in question closely adjoined structures 211 and 217. Structure 211 is a household complex comprising a quadrangular structure (2.5 x 2.45 m) and an oven-tanur inside. Built up to the North-East of structure 211 was structure 205, nearly quadrangular in plan, consisting of 3 chambers of which one was closed. In three corners of the other five skulls of pigs (?) were found. Though no ovens were found near the structure, a lot of ash was marked in its chamber's infill and around. So, the question of the cult nature of the structure examined could be put forward. South of it, ruins of other structures were partly uncovered. In particular, a greater part of rectangular structure 221 (Fig. 3) was divided into two chambers by two massive walls-buttreses. That structure was entered by the doorway, 0.5 m wide in the centre of the north-east wall. A big round hearth type of tanur was partly unearthed in the second chamber. The northern lengthwise wall of the first chamber was strengthened with a special wall built on to it from the inside. There was much ash in structure 221's infill as well. Interestingly, in the floor of this structure like in the case of structure 211, a small pit was revealed. It was 20 cm in diametre and 17 cm deep, and was coated with clay being reveted with sherds. The purpose that these pits were dug is still unknown.

Of a great interest is the structure 217 closely adjoining those 203 and 211 (Fig. 3). It is a rectangular one-chambered structure, partly destroyed, internally measuring 4.4 x 2.15-2.2 m. Its lengthwise walls were strengthened with buttreses. "A passage" in the central segment of the wall, practically completely destroyed, appears to have been a doorway leading to the structure, which was later blocked by the structure 203's wall.

On a clay platform (0.55 x 0.5 m), 15 cm high, near the central segment of the eastern crossing wall, a small horseshoe-shaped oven (0.35 x 0.35-0.4 m) remained. Its walls were built of clay mixed with adobe and grey-greenish loam. Its floor was a well-tamped ground covered with grey-greenish loam and coated with gyps mortar, a thin layer of which was also revealed on the wall's inner faces.

The structure just discribed is the only big dwelling structure (of a rectangular plan with gyps floor and the hearth inside) that has been so far discovered at Yarimtepe II.

Right now, let us examine building complexes situated to the West of tholoses 42–44. The first one is tholos 45, 4 m in diametre. It was entered by a doorway 0.8 m wide in its wall's southern sector. An extention, of which walls were in a bad state of preservation, adjoined the structure in question from the West. In every Yarimtepe II level, especially where examined, remains of household-dwelling structures were revealed, roundish and (mainly) rectangular in plan, which "laid" on each other. As a rule, they functioned for quite a short period and were quickly destroyed, new ones being built at their places. In particular, such situation was revealed to the South of tholos 45 (Fig. 3); three rows of structures, including small roundish ones (tholoses 46, 47, 49) and remains of a big oven (1.15-1.3 m in diametre) type of tanur (structure 230) laying on the other, were unearthed here.

A big building complex, which occupies a considerable area in the south-west part of the trench, may be one of the most interesting objects so far excavated in the Yarimtepe II · VI level and, probably, at the settlement on the whole. In the centre of it, there was a roundish structure (tholos 31), 2.6 m in inner diametre, of which massive wall, 0.6-0.7 m wide, had been preserved at a height of 1 m. A partition-wall divided the tholos into two unequal parts–the southern smaller and the northern (Fig. 5) comprising three chambers (0.5 x 1.0 m, 1.5 x 0.7 m, 1.4 x 0.65 m). Two alabaster slabs survived on the inner face of the tholos wall in the middle chamber. Probably, the whole upper part of the tholos wall was reveted with such slabs from the inside.

Structures of mud-brick adjoined the tholos from the North and the South, while from the East and the West there was "a corridor", 0.5-0.9 m wide, between the tholos and walls of structures around. The



Fig. 5 Yarimtepe II. Tholos 31.

latter enclosed it from every side, except the west one, where there appears to have been an entrance to the tholos. In total, 22 structures were uncovered around the tholos 31: 5 from the North and East sides, 11 from the South and 1 from the West. All of them are rectangular or quadrangular in plan, and measured 0.6 x 1.65 m, 1.7 x 1.65 m, 1.2 x 1.2 m, 2.1 x 1.5 m, 0.8 x 0.8 m, 2.3 x 1.3 m, etc.

There is not a shadow of doubt that the complex examined was not for dwelling because structures' measurements are extremely small. Interesting to note is that household articles and animal bones found inside and around the structures were comparatively small in quantity. Probably, it was a big community storage-warehouse situated nearly in the very centre of the settlement. To date, similar complex has not been discovered at any other ancient Mesopotamian settlement. At the same time, remains of a roundish structure, practically analogous to tholos 31, were unearthed in the Yarimtepe II · III level. It was also divided into two parts, the smaller of which consisted of three chambers. It appears that this structure served as a food storage as well. Big clay vessels and a great quality of cereal grains were found there. The VI building level of Yarimtepe II just examined allows to form quite a complete idea on the settlement's architecture in general. Through the whole period that the settlement existed, a roundish one-chambered structure type of tholos was the main form of Yarimtepe II dwelling architecture. Cult structures were also of the same plan, as was a considerable number of household structures.

To be accentuated is that this characteristic is absolutely applied to the settlement of Yarimtepe III, where remains of tholoses were uncovered in every level of the Halaf layer. There are multi-chambered tholoses here as well, one of which, for instance, is analogous to that of the XVII level of Tepe Gawra [Tobler 1950: P1.XLII, b]. Of much greater interest, however, is another tholos-type structure (137)– the biggest roundish structure, 5.5-5.85 m in inner diametre, having been excavated at Yarimtepe II (Fig. 6) and vertical walls of which having survived at a height of 1.55-2.02 m. Inside the structure, there were 4 angle constructions, measuring 1.5 m a side with the whole structure high, built up symmetrically



Fig. 6 Yarimtepe III. Tholos 137.

along the tholos wall. The tholos was entered by a narrow doorway (0.41-0.48 x 0.81 m) in the south of its wall. A threshold, 0.45 m high (from the floor level), was coated with gyps. Near it, by the wall, there was a small oven type of brazier ca. 35 cm high. Tholos roof was flat [Kubba 1987: fig. 105].

Animal bones, fragments of vessels, spindle wares, zoo- and anthropomorphic figurines and numerous clay "sling bullets" (exempli gratia not less than 700 of them come from only one angle construction's infill) were brought to light in the tholos.

In spite of the atypical inner structure, the tholos in question was for dwelling. Up to now, tholoses with those angle constructions inside have not been discovered at Halaf settlements. The "interieur" of the Tepe Gawra tholos mentioned above was different. True, from Mary (Fara/Ur I period: 2900-2460 B.C.) a big clay model (54 cm in diametre) of a roundish house with similar angle constructions inside was unearthed (now kept in the National Museum, Damascus) [Strommenger 1964]. That makes it possible to argue that structures, roundish in plan, with such "an interieur" could be sporadically erected in Mesopotamia right up to the mid III mil. B.C., while building of roundish houses with flat or (especially) cupolla-shaped roofs still stayed in practice–some villages of north Syria are still built with them.

Let us return to the Halaf architecture, for which dwelling and household structures, roundish in plan, were most typical. Really, roundish structure type of tholos is the dominant form; this form is consistent at many settlements.

The fact that the roundish-planned architecture suddenly appeared in North Mesopotamia in the V mil. B.C. seems to be a phenomenon itself. Judjing from Tepe Gawra, roundish structures did not vanish here right away with the Ubaid culture. But, there is no doubt that the Ubaid invasion to North Mesopotamia drew the line of roundish-planned structures in building and a new architectural form started to develop here; to be more precise the revival of the Pre-Halaf architectural tradition took place. If the reason that the roundish-plan architecture was brought to end in North Mesopotamia in the late V-early IV mil. B.C. is clear, to date we do not know where the roots of the Halaf culture and its peculiarity such as the roundish-planned architecture is to be sought.

It is not our aim to examain the problems of the Halaf cultural origin and the practice of roundish structure building known from the Pre-Pottery Neolithic Age. We suppose it to be most important to note here that in the Halaf period roundish one-chambered house was the main architectual form at the settlements of Southern Caucasus. A. I. Djavakhishvily seems to be quite right to belive that in no Early Agricultural cultures of Near East the roundish-planned architecture has such an integral character as in Transcaucasus [Джавахишвили 1973: 349]. One can compare it only with the architecture of Halaf settlements of North Mesopotamia.

Is this coincidence a mere chance or the result of interdependency? Though we have no convincing evidence to answer this question, I guess that one could hardly explain such an identity of architectural forms in North Mesopotamia and Transcaucasus in the V mil. B.C. as a mere chance. Are this fact and other available data on the Halaf-Transcaucasus relations linked? If, for instance, J. Mellaart's hypothesis that the Early Halaf tribes were migrants from mountain regions, in particular from Van [Mellaart 1975], is corroborated in future and tholos-type structures are discovered there, then one can argue that the roundish-planned architecture having come into being in the V mil. B.C. in both Mesopotamia and Transcaucasus is connected with this region, while now some scholars suggest that this roundish-plan architecture came to Mesopotamia from the Southern Caucasus.

Literature

Akkermans, P. M. M. G.

1989 *Tell Sabi Abyad: the Stratigraphy and Architecture. Excavations at Tell Saby Abyad.* Oxford: BAR International Series.

1990 *Villages in the Steppe.* Amsterdam: Amsterdam Universiteit.

Aurenche, O.

1981 *La Maison Orientale 1' Architecture du Proche orient ancien des Origines au Milieudu Quatrieme Millenaire. 1.* Paris.

Джавахишвили, А. И.

1973 *Строительное дело и архитектура поселений Южного Кавказа V-III тыс. до н.э.* Тбилиси: Мецниереба.

Hijara, I.

1978 Three new graves at Arpachiyah. *World Archaeology*, Vol II, n. 2: 125–128.

1980 Arpachiyah 1976. *Iraq*, XLII: 131–151.

Kubba, Shamil A. A.

1987 *Mesopotamian Architecture and Town Planning from the Mesolithic to the End of Proto-historic Period 10000–3500 B.C. Part I and II.* Oxford: BAR International Series.

Lloyd, S., Muller, H. W., Martin, R.

1972 *Ancient Architecture. Mesopotamia, Egypt, Crete, Greece.* New York.

Mallowan, M. E. L. and Gruikshank, Rose J.

1935 Excavations at Tell Arpachiayh. *Iraq*, Vol.II, part I.

Matsumoto, K., Yokoyama, S.

1995 Excavations at Tell Songor B. *al-Rāfidān*, XVI: 1–274.

Mellaart, J.

1975 *The Neolithic of the Near East.* London: Thames and Hudson.

Merpert, N., Munchaev, R.

1971a Excavations at Yarim Tepe 1970. *Sumer*, XXXVII: 9–22.

1971b The archaeological research in the Sinjar valley (1971). *Sumer*, XXXVII: 23–32.

1987 The earliest levels at Yarim Tepe I and Yarim Tepe II in Northern Iraq. *Iraq*, XLIX: 93–119.

1993a *Yarim Tepe II: The Halaf levels, Early Stages in the evolution of Mesopotamian Civilization.* Tucson and London: The University of Arizona Press.

1993b *Yarim Tepe II: The Halaf levels, Early Stages in the evolution of Mesopotamian Civilization.* Tucson and London:

The University of Arizona Press.

Munchaev, R., Merpert, N.
1973 Excavations at Yarim Tepe in 1972. *Sumer*, XXIX: 3-16.

Мунчаев, Р. М., Мерперт, Н. Я.
1981 *Раннеземледельческие поселения Северной Месопотамии.* Москва: Наука.

Radi, S., Seeden, H.
1980 The AVB Rescue excavations at Shams ed-Din Tannira. *Berytus*, XXVIII: 88–126.

Seeden, H.
1982 Ethnoarchaeological Reconstruction of Halafian Occupational Units at Shams ed-Din Tannira. *Berytus*, XXX: 55–95.

Strommenger, E.
1964 *The Art of Mesopotamia.* London.

Tobler, A. J.
1950 *Excavations at Tepe Gawra. Vol.2.* Philadelphia: University of Pennsylvania.

Watson, P. J., Le Blanc, S. A.
1990 *Girikihaciyah. A Halafian site in Southeastern Turkey.* Los Angeles: University of California.

MAISON, MAISONNÉE ET STRUCTURE SOCIALE EN MÉSOPOTAMIE PRÉHISTORIQUE (6è – 4è MILLÉNAIRE)

Jean Daniel FOREST*

Il y a maintenant une quinzaine d'années, une vaste opération de sauvetage réunissait aux abords du Djebel Hamrin de nombreuses équipes de nationalités très diverses, dans un climat d'entraide et de collaboration. Ce fut pour nous l'occasion de découvrir l'extraordinaire énergie de nos collègues japonais, d'apprécier la qualité de leur travail, et tout naturellement de nous lier avec eux d'amitié. Ayant trait à l'Obeid du nord (et donc entre autres à Kheit Qasim III, notre petit site obeidien du Hamrin), le présent article nous semble approprié pour rendre hommage à l'Institute for Cultural Studies of Ancient Iraq, et plus spécialement à son directeur Hideo Fujii.

L'habitat préhistorique de la Mésopotamie du nord témoigne d'une curieuse hésitation entre deux modèles architecturaux nettement distincts: alors que l'Obeid du nord ne connaît, dans les premières phases de son évolution (Gawra XIX-XVII, Fig. 1:1), que des habitations modestes de plan tripartite simple (une vaste pièce centrale s'insérant entre deux rangs de petites annexes latérales), de nouvelles solutions apparaissent dans le courant du Vème millénaire, avec des bâtiments plus vastes et plus complexes, où trois unités tripartites s'emboîtent de façon à former une sorte de plan cruciforme (Gawra XV, Kheit Qasim, Abada, Fig. 1:3)[1]. Enfin, la culture qui fait suite à l'Obeid du nord au IVème millénaire (ce que nous appellerons la culture de Gawra) voit le retour à la formule la plus simple et à un habitat de petites dimensions (Gawra XII-IX, Tell Musharifa, Degirmentepe par exemple, Fig. 1:4–5 et Fig. 3). Or ces transformations ont une incidence profonde sur la composition de la cellule familiale: tandis que les constructions les plus simples ne peuvent accueillir qu'une famille restreinte (soit un couple et quelques enfants), les maisons les plus complexes abritent une famille plus vaste dont les deux éléments constitutifs peuvent à la fois se rassembler dans le hall central communautaire et s'isoler dans des appartements privés latéraux. Il s'agit alors plus vraisemblablement de deux couples de générations différentes et de quelques enfants (ce que l'on appelle une famille-souche), mais peu importe. Il suffit d'observer que chaque solution architecturale est liée à une répartition spécifique des individus au sein du groupe pour comprendre que l'évolution observée dans l'habitat traduit des transformations dans la structure même de la société.

On a donc affaire à un phénomène important, mais avant d'en proposer une explication, il faut rappeler que l'Obeid du nord appartient à un type de sociétés, la "Communauté Domestique Agricole" (ci-dessous abrégée en CDA), dont on connaît très bien le fonctionnement, grâce aux travaux des ethnologues, en Afrique par exemple (Meillassoux 1975, 1977). Dans ces sociétés, chaque communauté locale est gérée (plutôt qu'à proprement parler dirigée) par un doyen entouré d'un conseil. Le personnage doit cette responsabilité à la place qu'il occupe dans la structure généalogique du groupe en fonction du concept d'aînesse, et ses prérogatives s'exercent dans divers domaines. Au plan économique, en

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1) Cette évolution du plan de la maison va de pair avec l'adoption de nouvelles solutions techniques. Tandis que les constructions les plus anciennes ont des murs extérieurs rectilignes contrefortés par des pilastres en saillie (Fig. 1:1), la stabilité latérale des murs périphériques est en revanche assurée, dans les édifices plus récents, par la multiplication des décrochements (Fig. 1:2–3). Les deux solutions, quoique conduisant à des formes architecturales assez différentes, ont rigoureusement la même fonction technique. Plus efficace et plus simple, la seconde s'impose globalement, mais l'ancienne formule est dans certains cas conservée pour ses vertus décoratives, permettant d'attirer l'attention sur quelque bâtiment exceptionnel (par exemple la maison du chef du village à Abada, ou encore l'édifice où se réunit le conseil villageois à Kheit Qasim).

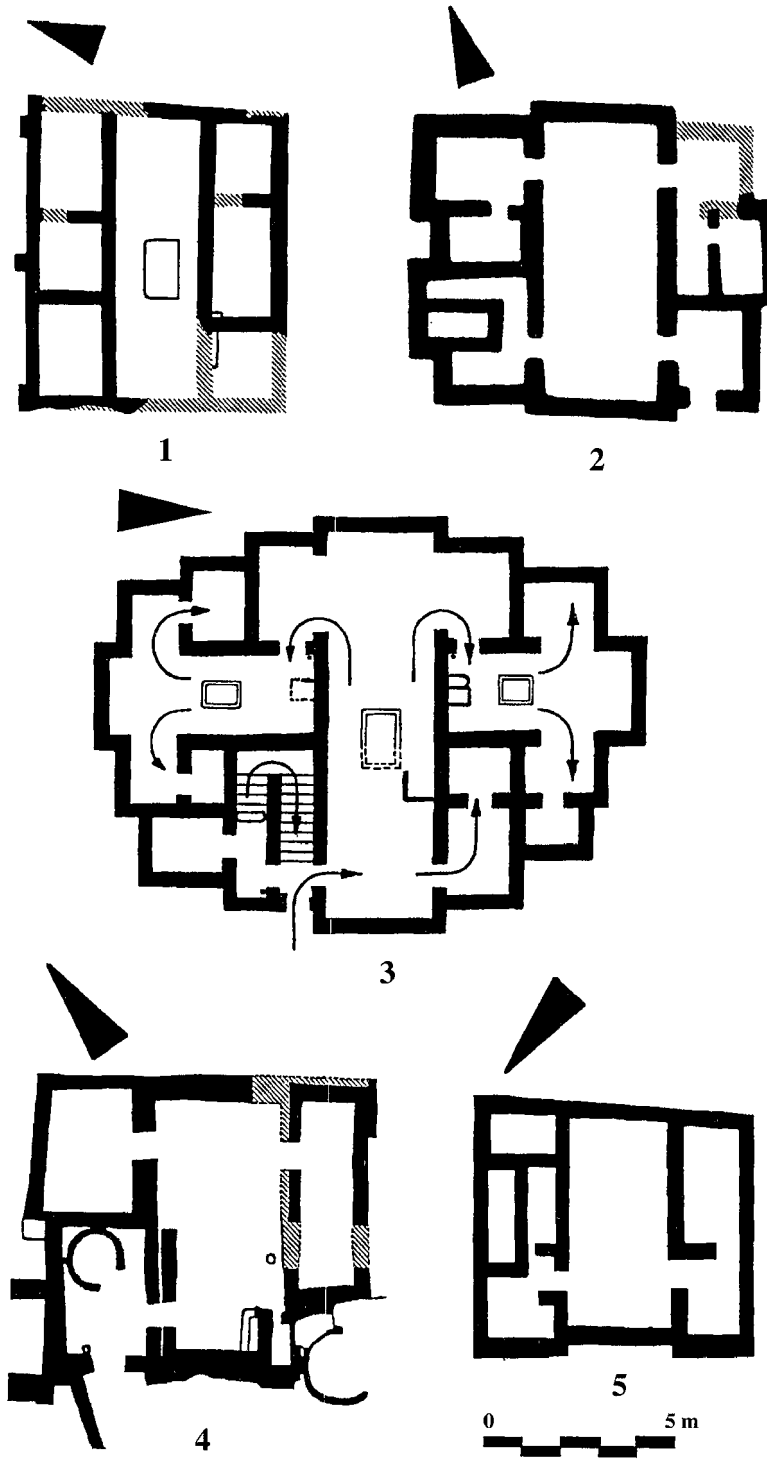

Fig. 1 Habitations des cultures d'Obeid du nord et de Gawra.
1: Tepe Gawra XVIII (d'après Tobler 1950, Pl. XIX, et Forest 1991, Fig. 6); 2: Telul eth Thalathat (d'après Egami 1959, Fig. 47); 3: Kheit Qasim III (d'après Forest-Foucault 1980, Fig. 2); 4: Tell Musharifa (d'après Oguchi 1987, Fig. 12, p. 50); 5: Tepe Gawra X (Tobler 1950, Pl. III).

particulier, c'est vers lui que converge la production commune, et c'est lui qui est chargé de la redistribuer de façon équitable. Ce système dit "prestataire-redistributif" est en fait destiné à pallier les difficultés momentanées que peuvent rencontrer les diverses cellules de production. On peut ainsi distinguer

deux structures emboîtées, l'une de *collaboration* (relative aux groupes domestiques qui forment autant de cellules de production), et l'autre *d'entraide* (relative à la communauté dans son ensemble). Il va de soi que les cellules de production sont d'autant plus fragiles qu'elles sont étroites, et que cette fragilité doit être compensée par des mécanismes d'entraide plus développés. Ce sont en fait les conditions de production (par le biais des relations qu'elles impliquent entre les producteurs) qui déterminent la solution retenue, c'est-à-dire l'ampleur respective des structures de collaboration et d'entraide.

Dans cette perspective, on songe immédiatement à mettre les transformations architecturales observées en Mésopotamie en relation avec les propriétés spécifiques d'environnements divers, ou avec des changements intervenant dans le mode de production, avec des causes en tout cas qui relèveraient de la structure de collaboration. La première proposition n'est guère tenable, à en juger par la façon dont les deux formes d'habitat se répartissent dans le temps et dans l'espace. Si les deux partis architecturaux n'apparaissent jamais ensemble dans une même agglomération, on les trouve à la même époque sur des sites où règnent les mêmes conditions naturelles (la grande habitation de Gawra XV est par exemple plus ou moins contemporaine des petites demeures de Telul eth Thalathat), ou même dans des niveaux différents du même site (Gawra par exemple), sans que rien ne permette d'envisager (en quelques générations !) quelque transformation notable du climat. Quant à la seconde proposition, rien n'indique la moindre transformation de la pratique agricole, qu'il s'agisse des espèces animales que l'on élève, des espèces végétales que l'on cultive, ou des outils utilisés. D'ailleurs, on voit mal comment l'adjonction à la famille nucléaire de quelques producteurs supplémentaires pourrait avoir des répercussions significatives sur la production, et surtout, il est difficile d'admettre que des sociétés ayant modifié leur pratique agricole (quelles qu'en soient les raisons) finissent par revenir à la solution initiale. On est ainsi conduit à penser que le phénomène que nous percevons comme étant cyclique cache en fait une évolution linéaire qui n'a aucun rapport avec les nécessités de la production.

Dès lors que la structure de collaboration semble hors de cause, on est conduit à chercher quelles pourraient être les conséquences de l'élargissement de la famille sur la structure d'entraide. Si l'on songe que dans les CDA, les chefs de famille servent de relais entre le responsable et son groupe, il apparaît facilement que l'avènement de la famille-souche permettrait de limiter le nombre des partenaires participant au jeu social, puisque le chef de famille exercerait alors son autorité sur davantage d'individus. Une telle solution faciliterait la prise de décisions et leur transmission, elle permettrait au responsable du groupe de mieux assumer ses fonctions de coordination, d'organisation et de gestion. Dans les sociétés traditionnelles cependant, les gens répugnent à modifier leur pratique, en sorte qu'un changement d'une telle ampleur devrait, pour avoir lieu, paraître indispensable: il faudrait que les partenaires sociaux deviennent progressivement assez nombreux pour rendre la situation ingérable, ce qui impliquerait évidemment l'élargissement des groupes humains suite à un essor démographique ou à des mécanismes d'accrétion.

Dans le cadre de cette hypothèse, l'évolution de l'habitat nord-obeidien pourrait être interprétée de la façon suivante:

– Dans un premier temps (Fig. 1:1), alors que les communautés sont encore réduites, chaque village n'est constitué que de petites unités d'habitat abritant des familles nucléaires, parce que les chefs de famille sont assez peu nombreux pour pouvoir tous participer aux affaires collectives. Dans une telle situation, la relation de l'aîné à son groupe est directe, la structure d'autorité n'excluant du pouvoir de décision que les femmes et les jeunes.

– Mais l'élargissement des communautés rend les familles nucléaires trop nombreuses, et l'apparition de familles-souches, isolées dans de grandes unités d'habitat (Fig. 1:3), permet alors à celui qui en est le responsable de représenter davantage d'individus. Cette nouvelle solution a l'avantage de concentrer l'autorité morale sur un plus petit nombre de gens, tout en sauvegardant l'idée que ces derniers sont encore des chefs de famille. La relation de l'aîné à son groupe devient alors plus indirecte, puisque les hommes mariés les plus jeunes sont également exclus du pouvoir de décision. Néanmoins, cette

exclusion n'est que momentanée car, à la mort de leur père (éventuellement de leur oncle), ils deviennent à leur tour les chefs d'une famille-souche. La structure d'autorité reste donc fondamentalement égalitaire.

L'évolution de l'habitat et donc de la composition de la cellule familiale nous amènerait ainsi à distinguer deux types de CDA, les unes *simples* et les autres *complexes*, selon que la structure d'autorité y serait directe ou indirecte. Il va de soi, cependant, que certaines communautés seulement deviennent assez importantes pour justifier l'aménagement de la structure sociale. Celles qui restent étroites n'ont pas besoin de prendre les mêmes mesures, et c'est vraisemblablement ce qui explique la permanence de la famille nucléaire sur certains sites (Telul eth Thalathat par exemple, Fig. 1:2), avec des habitations qui restent de petites dimensions.

Le retour à des constructions plus petites, et donc à la famille nucléaire, sur l'ensemble des sites (Fig. 1:4–5) peut être conçu comme la suite logique du même phénomène. Les communautés continuant de croître, les chefs des familles-souches deviennent à leur tour trop nombreux et sont donc remplacés par des gens situés à un niveau supérieur de la hiérarchie généalogique. Les groupes alors représentés sont désormais trop vastes pour que leurs membres puissent encore vivre sous un même toit et les habitations de grande taille perdent toute raison d'être en même temps que la famille-souche devient inutile. Cette fois, de nombreux individus sont définitivement exclus du pouvoir de décision, la relation de l'aîné à son groupe devient totalement indirecte, et les gens auxquels celui-ci s'adresse représentent davantage de monde, en sorte que la pyramide sociale se développe à mesure que sa base s'élargit.

L'apparition d'une catégorie particulière d'individus monopolisant le pouvoir de décision et s'interposant entre le responsable et la communauté constitue un phénomène majeur, susceptible de marquer la fin des CDA, et que nous serions donc tenté d'associer à la notion de "chefferie". Le terme, tel que nous l'entendons, n'est pas sans rapport avec ce que Service (1962) appelle "chiefdom" ou Fried (1967) "stratified society" mais nous préférons définir la chefferie comme un type de formations sociales où le pouvoir de décision se concentre entre les mains de quelques individus seulement en sorte que (pour plagier une définition de Fried) des gens de même sexe et de même âge n'ont plus également accès à la structure d'autorité.

Le scénario auquel nous songeons reste évidemment sujet à caution puisqu'il repose entièrement sur l'interprétation que nous donnons de transformations observables dans l'habitat, et en particulier, la césure capitale que nous proposons d'établir dans la trajectoire évolutive n'est justifiée que par le retour à la famille nucléaire que nous laissent entrevoir ces transformations. Notre hypothèse peut cependant être étayée par d'autres observations.

D'abord, le retour à des habitations de petites dimensions, et donc à la famille restreinte, va de pair avec l'apparition d'un habitat très dense (Gawra XII, Degirmentepe, Fig. 2 et 3), et donc très certainement de sites de plus grande taille. Il est clair que des communautés plus vastes se forment progressivement, avec tout ce que ce que cela peut impliquer d'un point de vue social et politique. Le changement s'accompagne également de pratiques funéraires beaucoup plus nuancées, témoignant donc d'une gamme de statuts sociaux plus étendue (Fig. 4). En fin de période (Gawra VIII) apparaissent même de grandes tombes construites associées à un mobilier d'une extrême richesse, impliquant à la fois la mise en place d'un réseau d'échange à longue distance (Anatolie, Afghanistan) et l'existence d'artisans capables de transformer en produits de luxe les matériaux (or, argent, lapis) importés. Enfin, ces notables dont nous postulons l'existence nous sont effectivement attestés par leur habitat particulier, puisque dès Gawra XII apparaissent des résidences somptuaires (Fig. 5). Il est intéressant d'observer que ces dernières sont d'abord dispersées au milieu de l'habitat ordinaire (Gawra XII-IX), ce qui indique que les notables sont encore proches de ceux qu'ils représentent et n'ont pas encore conscience de former un groupe distinct. Si l'on préfère, la relation horizontale qui les unit entre eux ne l'emporte pas encore sur celle, verticale, qu'ils entretiennent avec leurs dépendants. Au Niveau VIII de Gawra (Fig. 6), en revanche, le tell ne regroupe plus que des résidences somptuaires et fait figure d'acropole, dominant certainement un habitat ordinaire rejeté dans la plaine alentour. On a affaire cette fois à une véritable élite, constituée

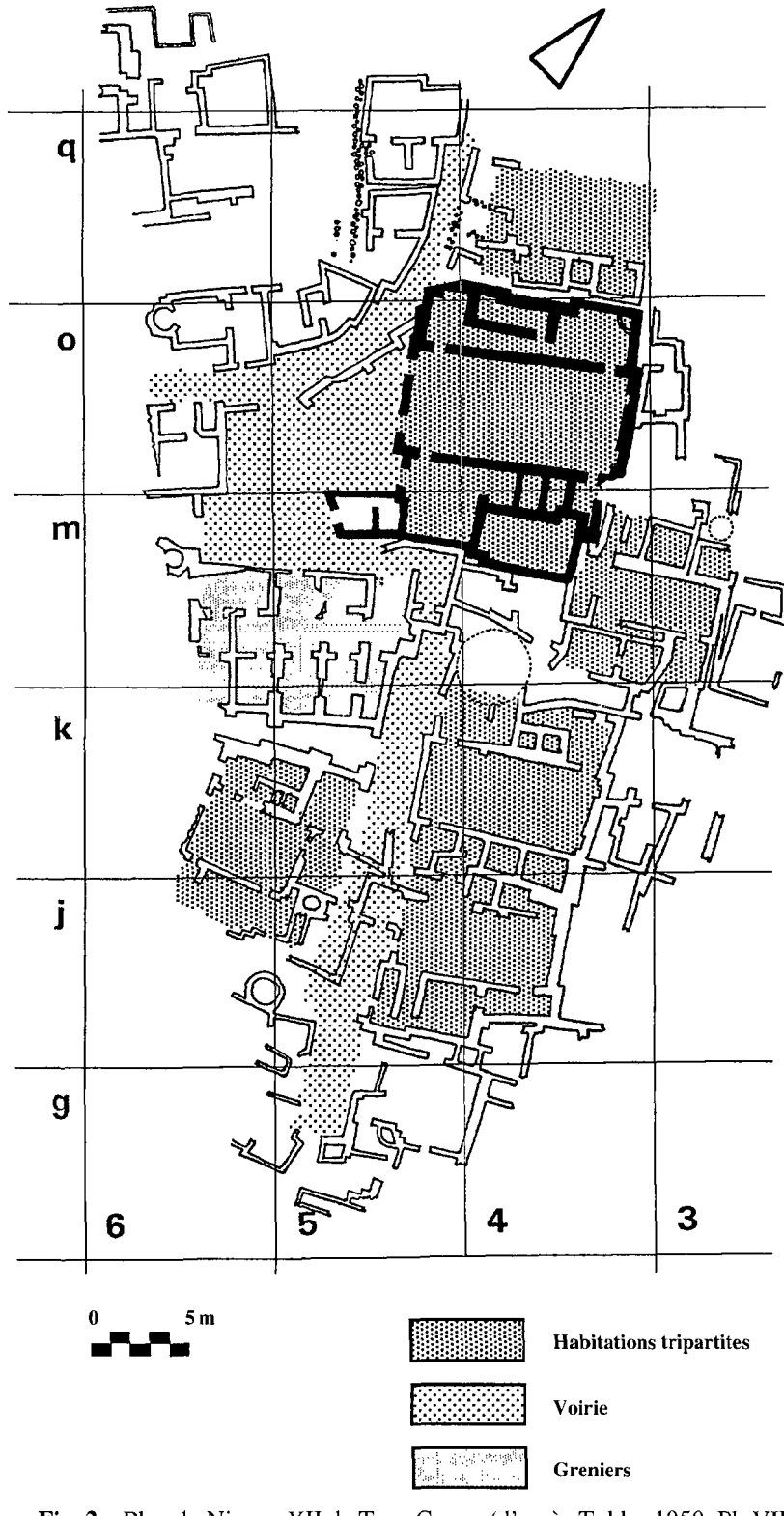

Fig. 2 Plan du Niveau XII de Tepe Gawra (d'après Tobler 1950, Pl. VIII).

en classe à part entière. Pour marquer cette évolution, nous serions tenté de réserver le terme de "*chefferie simple*" à la première situation, celui de "*chefferie complexe*" à la seconde[2].

Au total, les transformations que nous observons dans l'habitat nous amèneraient à distinguer quatre

2) En fait, le "chiefdom" de Service et la "stratified society" de Fried correspondraient plutôt à ce que nous appelons ici "chefferie complexe".

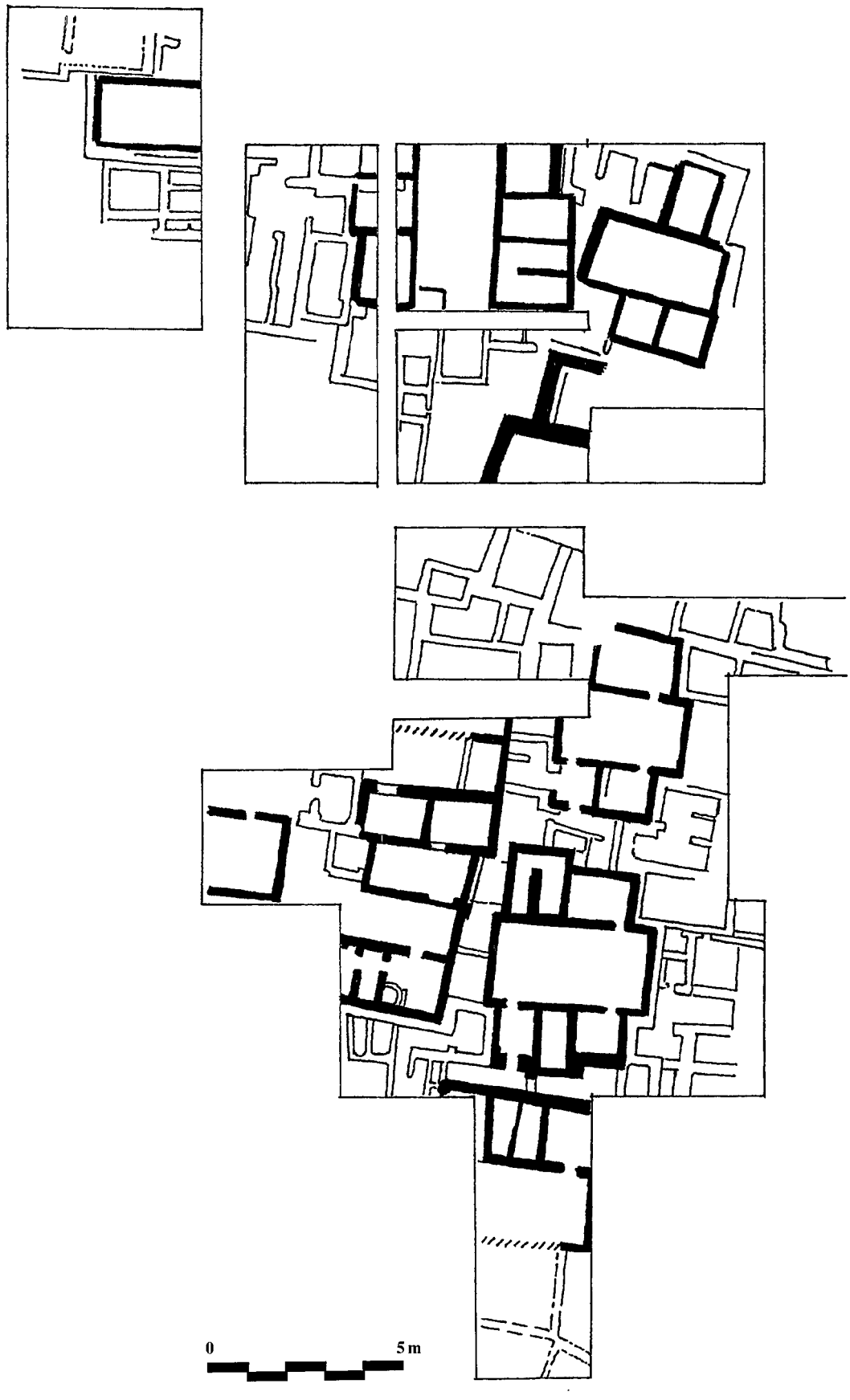

Fig. 3 Plan de Degirmentepe (d'après Esin et Harmankaya 1987, Fig. 2).

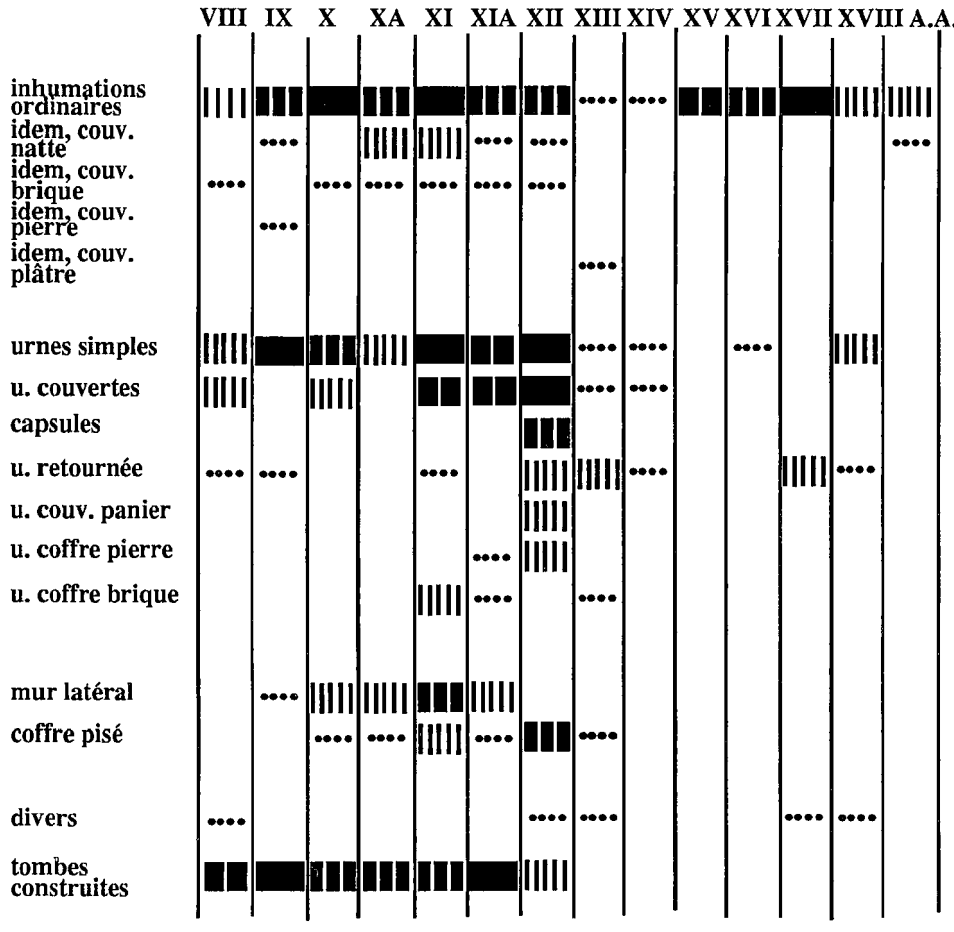

Fig. 4 Répartition des divers types de tombes dans la séquence de Tepe Gawra, aux Vème et IVème millénaires (cultures d'Obeid du nord et de Gawra), d'après Forest 1983, Pl. 33).

types de sociétés qui tendent à se succéder dans le temps et qui se caractérisent par une complexité croissante. La dynamique du phénomène nous semble reposer sur les contradictions inscrites dans le mode de production propre aux CDA. Celles-ci mènent en effet spontanément une politique nataliste, parce que dans un univers où la production repose entièrement sur l'énergie humaine, cette solution apparaît comme le plus sûr moyen de garantir l'avenir. Une telle politique, dictée par des considérations pratiques à court terme, entraîne un essor démographique, très lent et donc totalement invisible aux yeux des acteurs, qui en quelques siècles modifie la situation sociale et politique[3]. Or les gens réagissent à cette situation conformément à leur tradition, en particulier en utilisant toujours les mêmes critères pour désigner leurs responsables. C'est le principe de l'aînesse, appliqué de façon systématique, qui conduit à la transformation profonde de la structure des CDA, dès lors qu'il est confronté à la nécessité de gérer des effectifs plus nombreux. Cette solution est d'autant plus satisfaisante que le concept d'aînesse, issu du fond des âges, est perçu comme une valeur fondamentale et quasi naturelle. Le changement se fait donc sans que les acteurs en aient aucunement conscience, dans l'illusion conservatrice.

Enfin, il est intéressant d'observer que cette évolution reproduit celle qu'ont déjà connue d'autres cultures préhistoriques, dans la mesure où l'on constate le même passage de la famille nucléaire (El Kowm, Bouqras, Umm Dabaghiyeh, Fig. 7:1) à la famille-souche (Sawwan I/II et 'Oueili Obeid 0/1,

3) A dire vrai, l'essor démographique ne joue un rôle majeur dans le processus évolutif que pour des sociétés qui, en raison de certaines particularités du mode de production, privilégient l'intégration, plutôt que la segmentation.

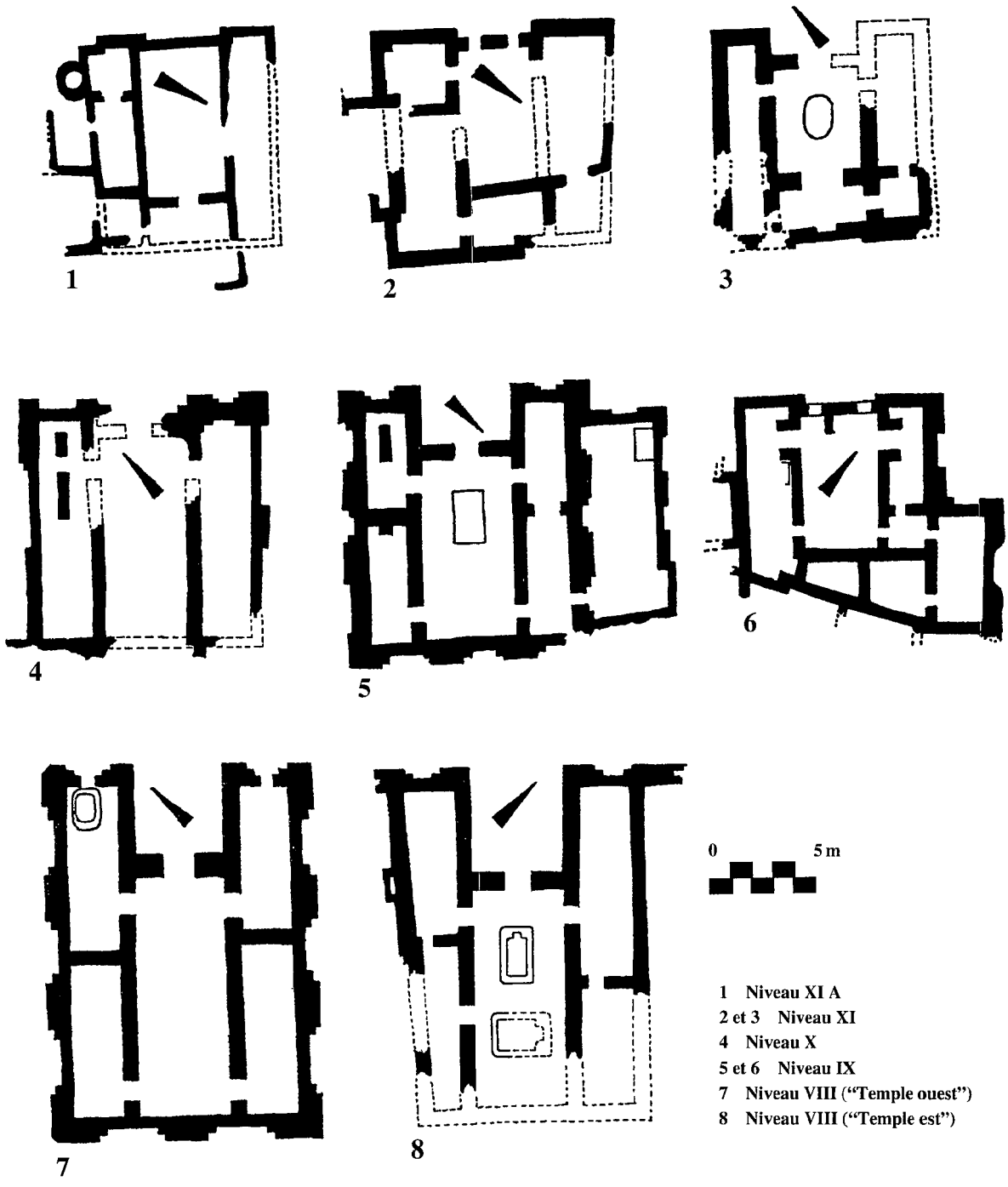

Fig. 5 Plan d'habitations à caractère ostentatoire des Niveaux XIA-VIII (culture de Gawra) de Tepe Gawra (d'après Forest 1983, Pl. 35).

Fig. 7: 2 et 4), puis le retour, vraisemblablement, à la formule initiale, à en juger seulement par l'habitat Çoga Mami Transitional du Niveau III d'Abada (Fig. 7:3)[4]. On s'aperçoit ainsi que près d'un millénaire avant l'Obeid du nord, le Hassuna/Samarra et l'Obeid 0/1 ont déjà atteint le stade des CDA complexes. Le phénomène est plus tardif dans l'Obeid du nord, car cette culture est issue du Halaf qui, privilégiant

4) La tradition Hassuna/Samarra/CMT reste sans descendance. L'habitat proprement obeidien (en Mésopotamien du sud) ne nous est pas connu, mais il témoigne très certainement du retour à la famille nucléaire et, pour diverses raisons qu'il n'y a pas lieu de détailler ici, nous pensons que l'Obeid 3/4 participe de ce que nous appelons la chefferie.

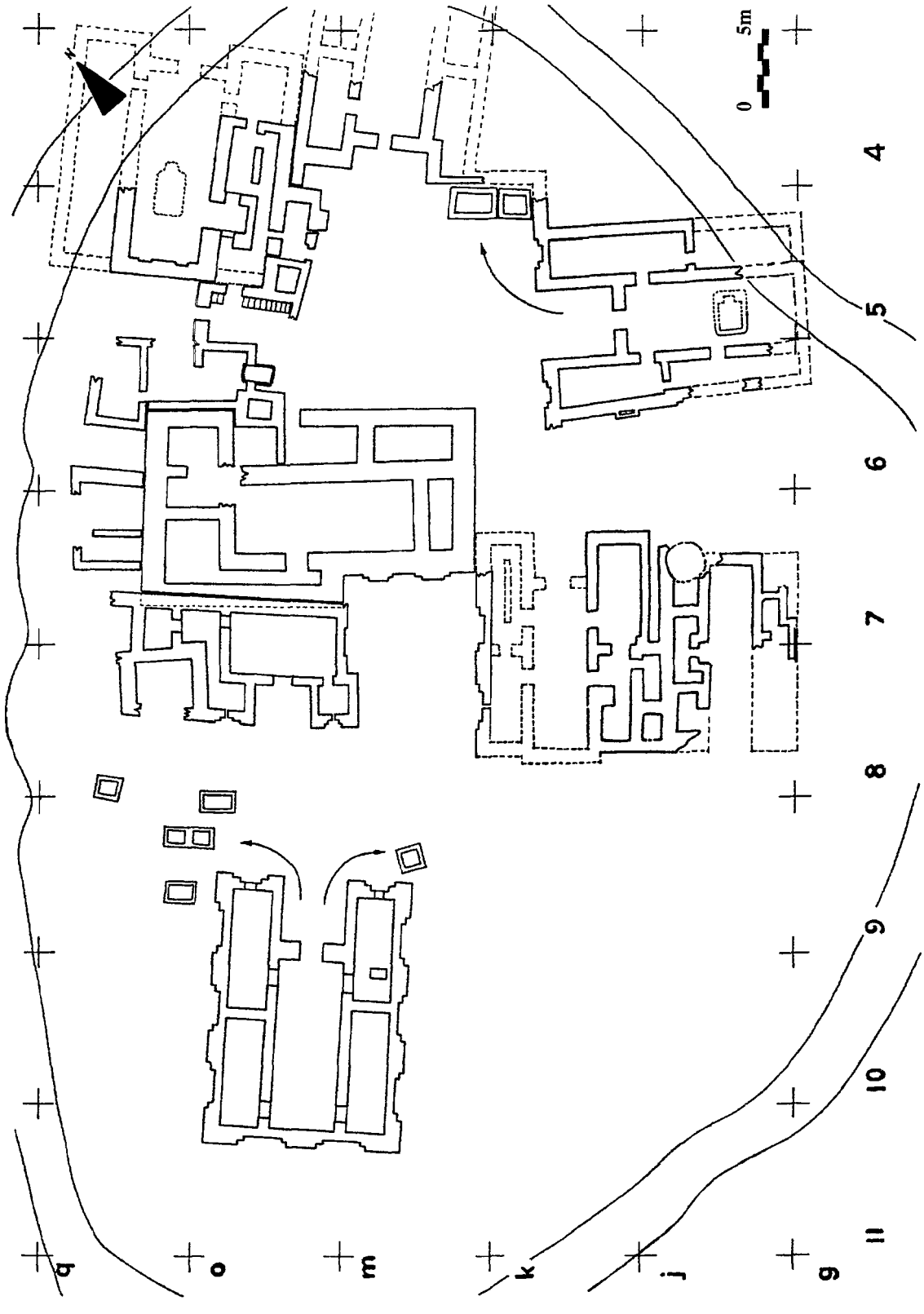

Fig. 6 Plan du Niveau VIIIC de Tepe Gawra (d'après Speiser 1935, Pl. XI et Forest 1983, Pl. 25).

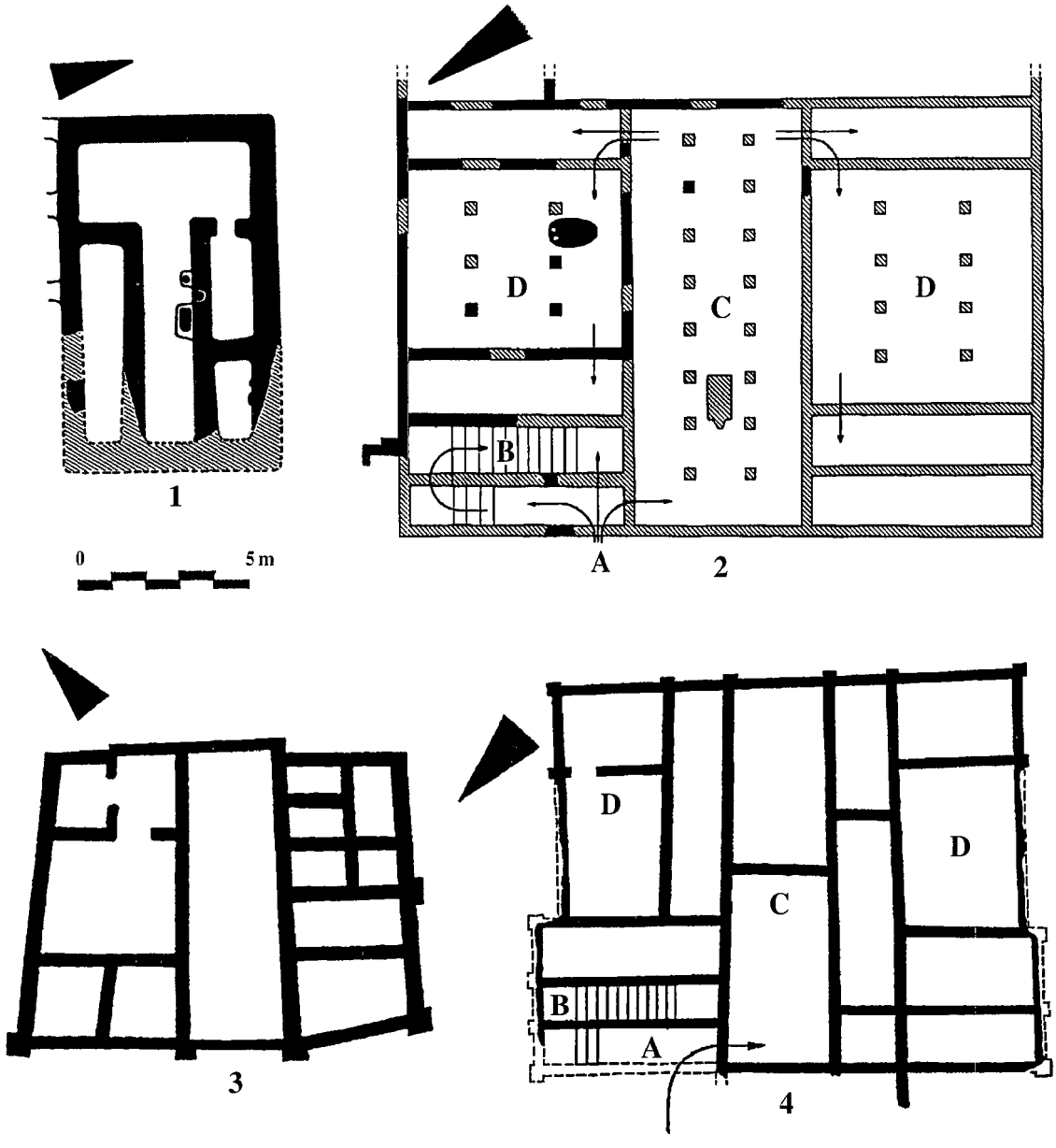

Fig. 7 Plan d'habitations des VIIème et VIème millénaires.
1: El Kowm, PPNB (d'après Stordeur et alii 1991, Fig. 4); 2: 'Oueili, Obeid 0 (d'après Forest, Vallet, Breniquet 1996, Fig. 49); 3: Tell Abada, Niveau III, Çoga Mami Transitional (d'après Jasim 1979, Fig. 1, p. 536); 4: Tell es Sawwan, Bâtiment 4 du Niveau I, Hassuna-Samarra (d'après Al A'dami 1968, Plan n°3).
A: entrée; B: cage d'escalier; C: hall communautaire; D: appartements privés.

la segmentation, a pendant un millénaire épuisé son énergie en expansion géographique. L'évolution est en revanche plus rapide, pour la raison simple qu'elle est cette fois secondaire. Contrairement au Hassuna/Samarra et à l'Obeid 0/1 qui ont dû innover, découvrir les solutions dont ils avaient besoin, l'Obeid du nord connaît, grâce au modèle que lui offre le sud, le chemin qu'il peut parcourir.

Références bibliographiques

A'dami (Al -), K.A.
1968 Excavations at Tell es Sawwan, second season, *Sumer* XXIV: 57–60.

Egami, N.
1959 *Telul eth Thalathat. The Excavations of Tell II, 1956-1957.* Vol. I. Tokyo: Yamakawa Publishing.

Esin, U. et Harmankaya, S.
1987 1985 Degirmentepe (Malatya Imamli Köyü) Kurtarma Kazisi, *Kazi Sonuçlari Toplantisi* VIII/I: 95–137.

Forest, J.D.
1983 *Les pratiques funéraires en Mésopotamie, du 5ème millénaire au début du 3ème.* Paris: ERC.
1991 Le système de mesures de longueur obeidien, sa mise en oeuvre, sa signification, *Paléorient* 17/2: 161–172.

Forest, J.D., Vallet, R., Breniquet, C.
1996 Stratigraphie et architecture de Oueili Obeid 0 et 1. Travaux de 1987 et 1989, in J.L. Huot éd., *Oueili, Travaux de 1987 et 1989.* ERC, Paris: 19–102.

Forest-Foucault, C.
1980 Rapport sur les fouilles de Kheit Qasim III, Hamrin, *Paléorient* 6: 221–224.

Fried, M.H.
1967 *The Evolution of Political Society. An Essay in Political Anthropology.* New York: Random House.

Jasim, S.A.
1979 Tell 'Abada, *Sumer* XXXV: 528-529 et 534–538.

Meillassoux, C.
1975 *Femmes, greniers et capitaux.* Paris: Maspero.
1977 *Terrains et théories.* Paris: Anthropos.

Oguchi, H.
1987 Tell Musharifa, in H. Fujii et alii, Working report on first season of jamanese archaeological excavation in Saddam salvage project, *Researches on the antiquities of Saddam Dam basin salvage and other researches.* Baghdad, Ministry of culture and information, State Organization of Antiquities and Heritage: 49–54.

Service, E.R.
1962 *Primitive Social Organization: An Evolutionary Perspective.* New York: Random House.

Speiser, E.A.
1935 *Excavations at Tepe Gawra.* Vol. I. Philadelphie: University of Pennsylvania Press.

Stordeur, D., Maréchal, C., Molist, M.
1991 Stratigraphie générale du tell néolithique d'El Kowm 2-Caracol (Syrie), *Cahiers de l'Euphrate* 5/6: 33–46.

Tobler, A.J.
1950 *Excavations at Tepe Gawra.* Vol. II, Levels IX-XX. Philadelphie: University of Pennsylvania Press.

TELL SHELGIYYA: AN EARLY URUK 'SPRIG WARE' MANUFACTURING AND EXPORTING CENTRE ON THE TIGRIS

Warwick BALL*

Tell Shelgiyya is one of the sites in the Saddam Dam Salvage Project in northern Iraq that was excavated by the British Archaeological Expedition to Iraq in March and April 1986 (Ball and Pagan 1996). It was excavated subsequently by the University of Edinburgh in April and May the same year (Watkins 1987: 150–1). Further excavations were carried out in 1987 and 1988 by the Iraq Department of Antiquities. This article concerns only the results of those excavations carried out by the British Archaeological Expedition at Shelgiyya and, to a lesser extent, other British excavations carried out elsewhere in the region: Tell Abu Dhahir (Simpson, forthcoming) and Tell al-Hawa (Ball, Tucker and Wilkinson 1989; Ball 1990a; 1990b).

Tell Shelgiyya is at the top of the Saddam Dam, about 5 km below where the Tigris enters Iraq from Turkey and only several hundred metres from the Syrian border. It is situated about a kilometre from the banks of the river, on the edge of the conglomerate river terrace overlooking the flood plain immediately to the south of a small wadi. The high massifs of both the Zagros Mountains and the Anatolian plateau can be clearly seen from the site — indeed, the mountains of Kurdistan, the 'knot' where both massifs meet, lie just to the northeast, with its foothills approaching to within a few kilometres of the river bank. On the west bank, low undulating hills immediately adjacent to river give way to the flat Jazira Plain. Tell Shelgiyya is thus very strategically located at the meeting place of several geograohical zones (Fig. 1).

The site consists of a fairly small main mound, Mound A, fairly typical in size and shape for this part of Iraq: a steep sided, oval shaped mound 22 m in height and some 80 x 120 m in area, on the edge of the wadi bed and river terrace (Pl. 1a, Fig. 2). A cemetery occupies much of the top and southern sides of the mound. Ancient occupation belonging to the mound continues for about 220 m in the fields to the south along the edge of the river terrace, rising to a second (but mainly natural) mound, Mound B, only 2 m lower than the main mound (Pl. 1b, Fig. 2). The occupation then continues for another 200 m or so in the fields further to the south, Area C (not shown on Fig. 2). In terms of surface area, therefore, the site is a comparatively large one: about 4–5 hectares.

Three main periods were found at Shelgiyya: Early Uruk, Late Assyrian and Hellenistic. The results discussed here concern only the Early Uruk, specifically the highly distinctive 'Sprig Ware' ceramics that were recovered from the site.

The Excavations

Preliminary surface investigations of the site prior to excavation had revealed considerable quantities of Sprig Ware at Tell Shelgiyya. This consisted mainly of extensive scatters on the surface of the 'saddle' between Mounds A and B. Since this distinctive ware is one of the least documented ceramic types in northern Iraq — and, moreover, represented a considerable gap in our overall sequence recovered from excavations elsewhere in the Project area — the recovery of stratified Sprig Ware deposits was our main objective in excavating the site.

Five trenches, H-J, were aimed specifically at investigating the most concentrated scatters of Sprig Ware on the northern slopes of Mound B (Pl. 1b), but lesser quantities (sometimes just residual) were

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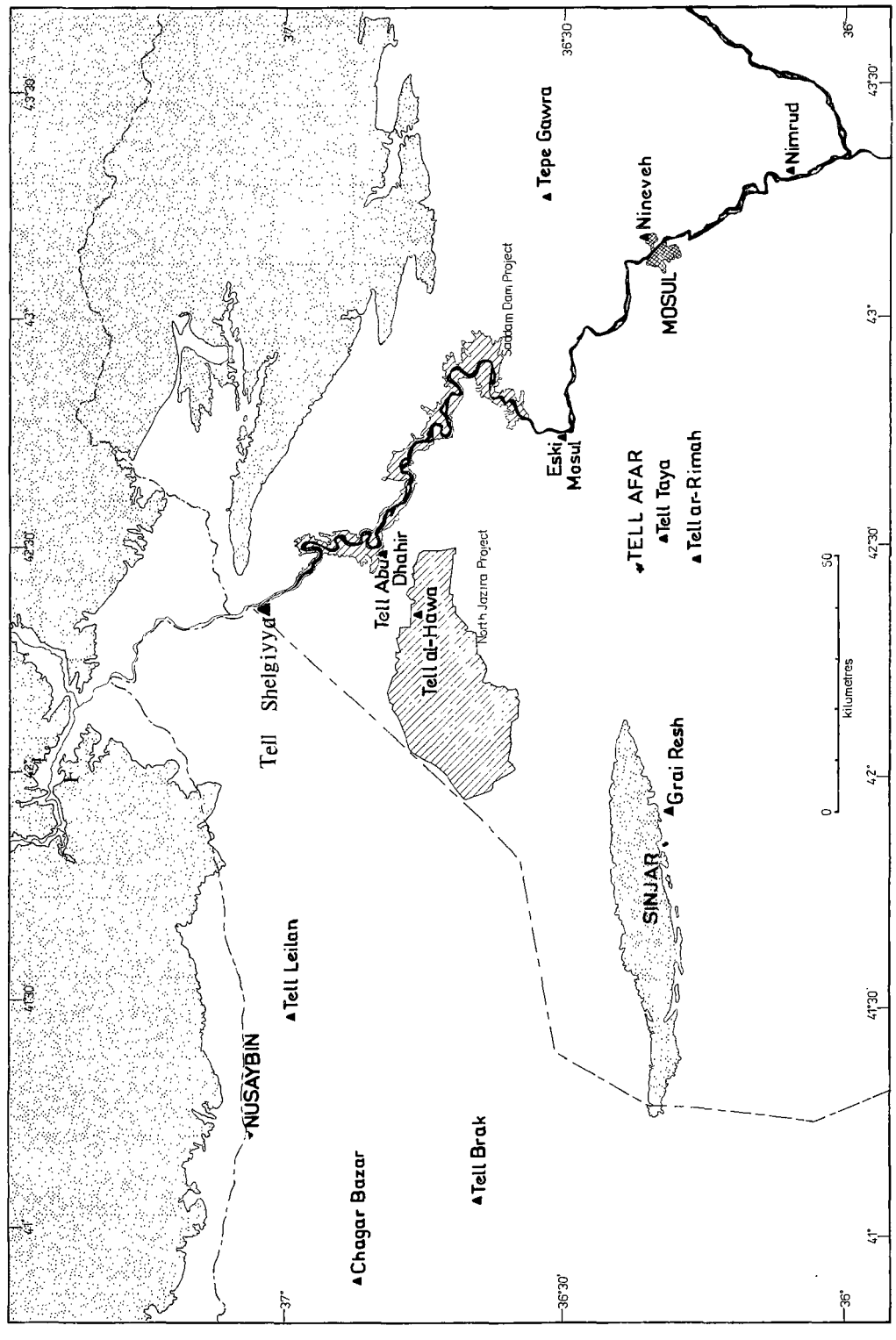


Fig. 1 Map of northern Iraq showing the location of Tell Shelgiyya in ralation to the Saddam Dam Project, the Tell al-Hawa Project, and other sites mentioned in the text.

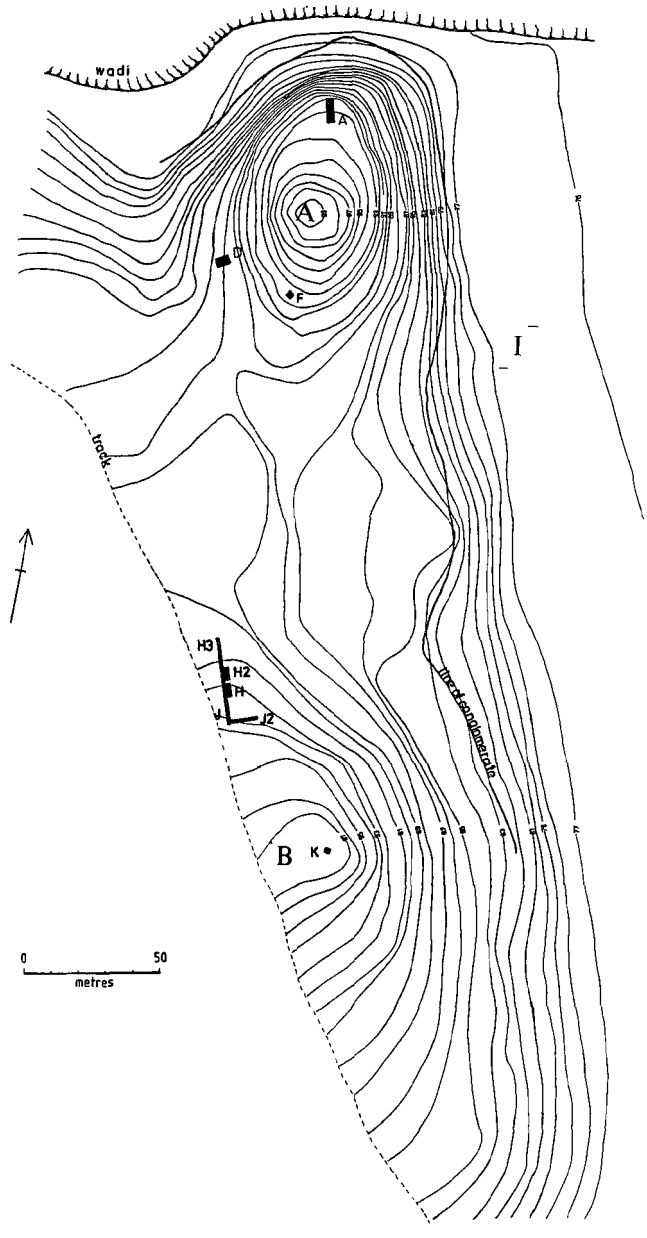


Fig. 2 Contour plan of Tell Shelgiyya. Trench PS is not marked.

also found in other trenches as well.

The only place where properly stratified Sprig Ware was found was in Trench PS, a 2 x 2 m sounding in the field a considerable distance from the main mound (Area C, outside the area shown in Fig. 2) where a particular concentration of Sprig Ware was visible on the surface. The trench was excavated to a depth of 1.5 m. No structures or definite occupation were found in the loose soil, but the pottery, apart from a few Ubaid sherds at the bottom, was entirely Early Uruk, and included many wasters.

Redeposited Sprig Ware, however, was found in vast quantities elsewhere on the site. This included large quantities of slag, Sprig Ware wasters and over-fired sherds. Apart from residual material in the later levels of the A and D soundings in the main mound, this was mainly in the H and J trenches. These were laid out where the surface scatter of Sprig Ware and associated waste material was densest, with the aim of trying to pick up any structures or stratigraphy associated with the Sprig Ware.

In H1 a wall, aligned roughly north-south, lay on natural soil. No pottery was directly associated with this wall, but the surrounding white-flecked brown soils, overlying the wall to a depth of 40 cm, contained Sprig Ware. In H2 the soils were again white-flecked, and no structures were found. The pottery was mainly Sprig Ware, and was accompanied by a great deal of slag. Trench J was divided in half by a stone slab. To the north of the slab (i.e., closer to the Sprig Ware deposits in H), more Sprig Ware was found, but to the south the material was mainly Late Assyrian. No structures or evidence of occupation were found; the slab appeared to be nothing more than an isolated occurrence.

In Trench K, a 2 x 2 m sondage on top of Mound B, a paved surface and wall was found about 90 cm below the surface. The deposits below the pavement contained Early Uruk material, so probably dates the structures, but the topsoil contained some Partho/Roman material and the pavement was cut by a grave dating probably to the Late Islamic period.

Pottery (Pls. 2-3, Figs. 3–4)

Sprig Ware was the largest single corpus of pottery found at the site. Indeed, with some 4600 diagnostic Sprig Ware sherds identified, it was probably the largest cohesive corpus found during the entire season, from any of the excavated sites. Virtually all of it was completely uniform. The fabric was a medium, bricky red or buff colour with fine, sandy grit temper, occasionally with a grey core. Vessels would range from small rounded bowls to large storage jars, with rim diameters often over 40 cm. Amongst the more characteristic forms are hole-mouth jars, hollow-rimmed jars and high double-rimmed pots. Most of the vessels were large. Not a single complete profile was recovered — indeed, there were virtually no joins in all the thousands of sherds recovered. The decoration was uniformly black, occasionally on a creamy slip. Patterns consisted of painted horizontal lines, diagonal cross-hatching, and occasionally checker-board and loops. Most distinctive of all were the ubiquitous 'sprig' motifs. These consisted almost entirely of sprigs branching off just one side of a central 'stalk', with the sprigs usually pointing upwards. Usually, the decoration consisted of just single 'leaves' of sprigs, but occasionally they would be clustered together into a 'branch' or 'tree'. Almost 500 of the sherds recovered were over-fired, wasters, or otherwise kiln rejects.

Almost all the examples recovered came from the H and J trenches between the two mounds, where the strata appeared to be uniformly slope wash. In the very few places where it was stratified, Sprig Ware occured above Ubaid pottery. Fixing the end of Sprig Ware was more difficult, as with such vast numbers of sherds there were naturally residual occurrences in later contexts. But where Sprig Ware layers were uniform, no later diagnostic sherds were found with them, so Sprig Ware probably ended before the Late Uruk. In other words, based on the Shelgiyya evidence alone, it seemed contemporary with the Early Uruk period. But it must be emphasised that no other diagnostic Early Uruk pottery — such as the 'chaffy ware' found at Tell al-Hawa or Tell Leilan — was found at Shelgiyya.

Other Sprig Ware sites in the Region

A few possible Early Uruk forms and fabrics, together with one or two (doubtful) sprig-related decorative motifs, were found at Tell Abu Dhahir, but they were isolated occurrences in residual contexts, and not related to any occupational strata. Elusive though this might be, it does at least indicate some settlement of indeterminate nature at Tell Abu Dhahir for this period. The only other site in this part of the river that had definite Early Uruk material was Shaikh Humsi Cemetery, just downstream. This was indicated by a few Sprig Ware sherds picked up from surface during a casual examination. A few more possible Early Uruk sherds (not Sprig Ware) were collected from the site of Bardiya 4, near Tell Abu Dhahir (Ball, Simpson and Tucker 1996).

Otherwise, Early Uruk material was entirely absent, even in sites we investigated which had Later Uruk (Bardiya 7, 8 and 9, Bardiya Cemetery, Tell Hamad Agha as-Saghir, Siyana and Tell Gir Matbakh). This absence is surprising, given the comparatively greater settlement density in the preceding Ubaid

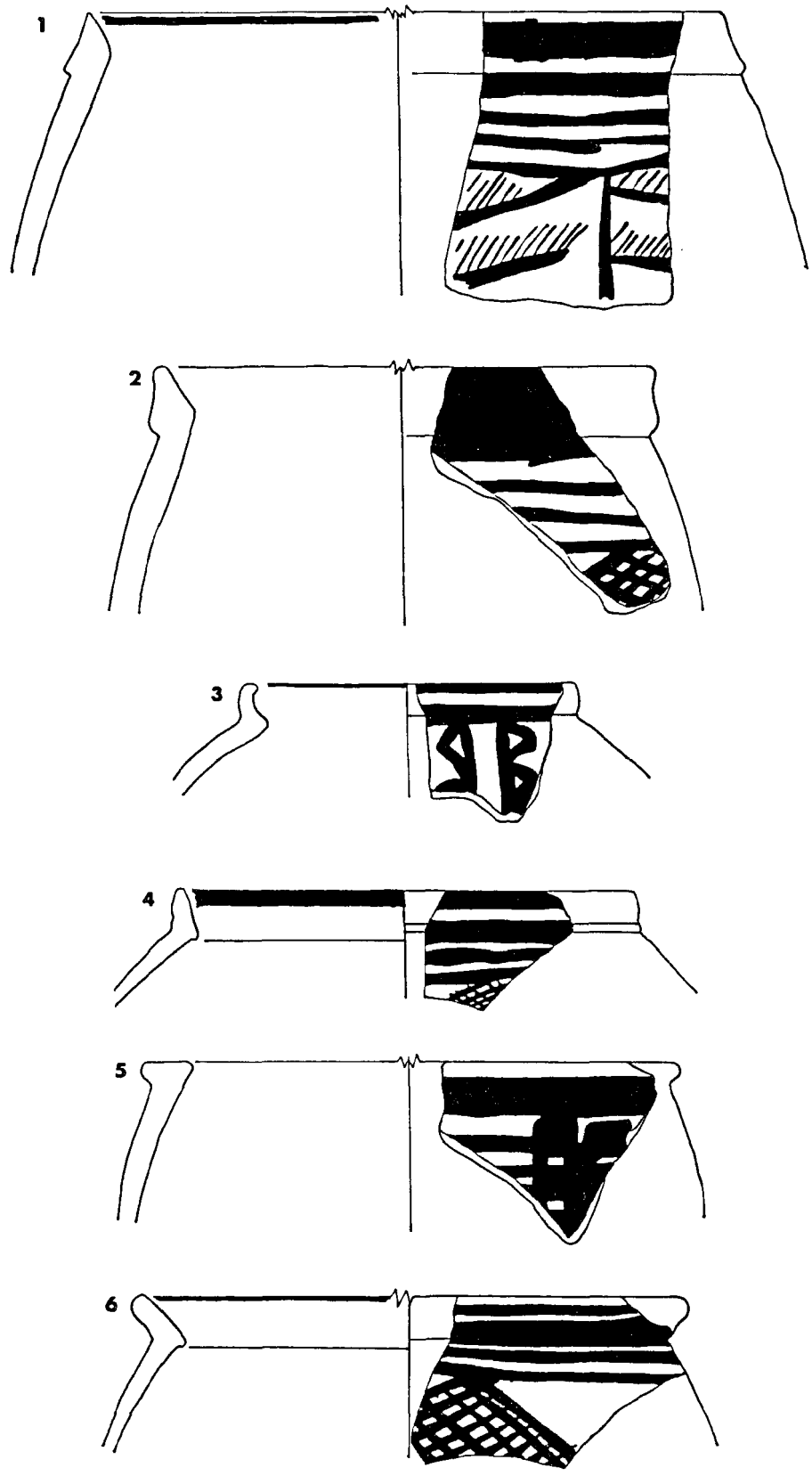


Fig. 3 Sprig Ware jars.

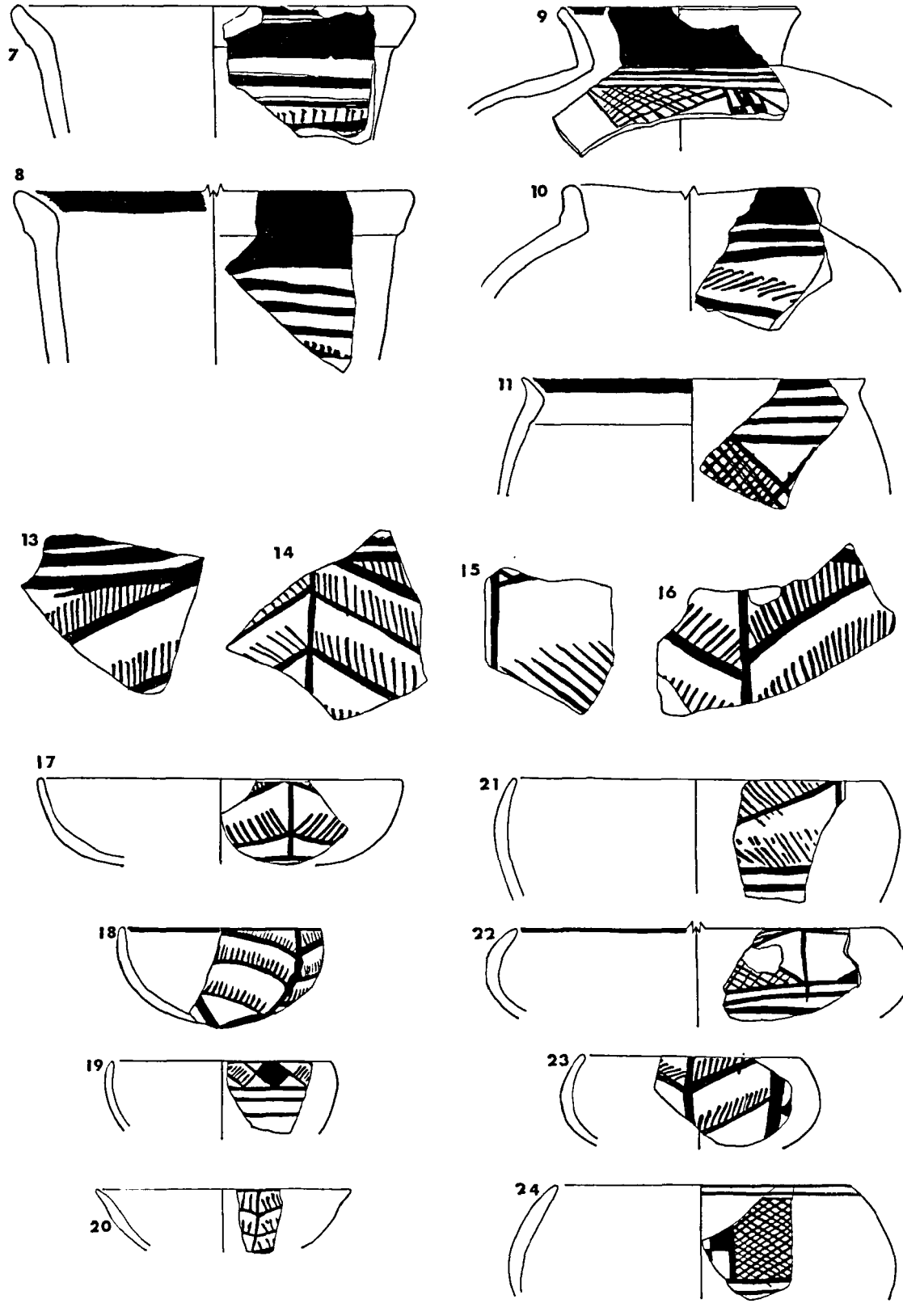


Fig. 4 Sprig Ware jars and bowls.

period, and the massive increase in settlement not far away at Tell al-Hawa (Ball, Tucker and Wilkinson 1989; Ball 1991). Perhaps this urban expansion at Tell al-Hawa had a 'dragnet' effect that attracted population away from the area by the river.

Tell al-Hawa is the only site in the region that had significant quantities of Sprig Ware — though nowhere near the quantities that were found at Tell Shelgiyya. One Sprig Ware sherd was first illustrated from there in 1938 (Lloyd 1938: 136-7; fig.4, Group III, 8) and our own investigations since recovered many examples, mainly from the surface survery (Ball, Tucker and Wilkinson 1989: fig.18, 5–8). At Hawa they were usually associated with the more readily recognisable Early Uruk types (such as 'chaffy' ware), but this can never be certain from the evidence of surface collecting alone. The Tell al-Hawa Sprig Ware sherds appeared identical in every respect to those from Shelgiyya, as were the few from Shaikh Humsi Cemetery.

Outside the region covered by our investigations, the main site for Sprig Ware is Tepe Gawra, where the type was first indentified. Sprig Ware occurred first in Strata XIII (Tobler 1950: 142, fig.184), the Ubaid. This single occurrence was presumably out of context, for virtually all other examples occurred in Strata XII-A and XII, which have been called 'Ubaid-Uruk transitional' (Tobler 1950: 145–51, figs. 235–327). Gawra XII is now more usually identified as Early Uruk. Both shapes and designs appear identical to the Shelgiyya corpus, as do the 'gritty brown' fabrics. The conclusion that they come from the same kiln seems highly likely. Indeed, large amounts of them were over-fired (greenish fabrics, distorted bodies) in exactly the same way as those from Shelgiyya. At Gawra, the over-fired examples were invariably associated with graves, as were many of the others. Furthermore, Sprig Ware is noted specifically as an import to Gawra, possibly from the Eastern Highlands. The sprig — or sprig derived — design also occurs on a number of seals from Gawra (e.g., Tobler 1950: figs. 48-53).

Elsewhere outside the region, Sprig Ware occurrences have rarely been recorded. Several examples occur at Tell Gubba VII (Ii 1993: fig. 20, nos. 554, 732, 757–61), which is dated to the Late Uruk-Jamdat Nasr (Fujii 1981). But the few fragments illustrated are different to the Shelgiyya-Gawra examples: the 'stalks' have 'sprigs' on both sides rather than just one. These might, therefore, be fragments of antlers (e.g., Fujii 1981: fig.13) rather than the true 'sprigs' that we have at Shelgiyya and Grawra. At other sites which have produced extensive corpuses of Early Uruk pottery, Sprig Ware appears conspicuously absent, e.g., Tell Brak (Oates 1985: 177–8, fig.2), Tell Leilan (Schwartz 1988). Whilst this brief survey is hardly exhaustive, it does at least demonstrate the rarity of the ware.

Discussion

The deposits found with the vast amounts of Sprig Ware in Trenches H and J on the northern slopes of Mound B below Trench F do not bear any resemblance to conventional occupation deposits. It seems most likely, therefore, that this Sprig Ware concentration represents a redeposition. The origin of this redeposition, however, is still obscure; the rather flimsy — and inadequately dated — nature of the structures found in Trench F above would not be consistent the massive quantities found below. Any original structures and occupation associated with the Sprig Ware, therefore, must be located elsewhere on the site, or be completely destroyed.

The nature of the redeposited Sprig Ware concentrations themselves in Trenches H and J provide further clues as to their origin. Despite being redeposited, they were very homogeneous, with little or no contamination. There were also no complete vessels found — indeed, it was not possible to make a single join between any of the thousands of Sprig Ware sherds found in this area. Furthermore, the deposits included quantities of slag, wasters and over-fired examples. This evidence suggests that Trenches H and J and the northern slopes of Mound B generally was a dumping ground from a kiln or kilns that have either disappeared altogether or remain unexcavated elsewhere on the site (a kiln was in fact excavated in Trench D, but has been dated much later).

Whilst considerable quantities of Sprig Ware were found in residual contexts elsewhere in the

excavations, by far the greatest quantities come from the H and J 'dump'; no evidence was found of large scale Early Uruk occupation consistent with producing such prodigious amounts of waste Sprig Ware. The sheer quantity of Sprig Ware fragments, together with the large numbers of wasters and over-fired vessels, suggests that Tell Shelgiya was a manufacturing and export centre for Sprig Ware — far more was being produced than could possibly be consumed at an otherwise small to medium sized settlement such as Tell Shelgiya. But only a comparison of trace elements in samples of this intriguing ware from sites such as Tell al-Hawa and Tepe Gawra can confirm this.

The rich, agricultural land in the flood plain to one side of Shelgiyya, and the extensive grazing and dry farming lands stretching onto the Jazira Plain to the other, would have made the settlement at Shelgiyya a fairly prosperous one. Furthermore, its location giving easy access to the Anatolian plateau, the Kurdish mountains, and the Jazira Plain — not to mention the waterway in either direction — would have made it a highly strategic one. The strategic location of Shelgiyya would make it ideally placed as an exporting centre. These two factors, prosperity and strategy, would have presumably determined the foundation and subsequent nature of the settlement. By the later Uruk period, however, the settlement appears to have diminished in size, and the scanty evidence — mainly from surface pottery — seems to indicate very minor settlement until the Late Assyrian period.

The distinctive sprig motifs that define this ware have no known antecedents and few, if any, survivals into succeeding periods — an unusual circumstance given the popularity and long history that distinctive decorative motifs otherwise generally enjoy in the ceramics of the region (e.g., hatched triangles, stripes, festoons, etc.). Sprig Ware and the culture — if any — associated with it, therefore, must be seen as an isolated phenomenon. This suggests that the people associated with its design and manufacture were originally from outside the region. Tobler (1950 : 147) in fact suggested that the ware came from the Eastern Highlands, and the sprig motif certainly appears to suggest images of pine needles and conifers. This would confirm a mountainous rather than lowland origin for the 'Sprig Ware People' — one recalls the proximity of the Kurdish hills to both Shelgiyya and Gawra. The possible existence of Sprig Ware at Tell Gubba and its absence from Tell Brak and Tell Leilan might confirm this assumption. The evidence from Tepe Gawra furthermore suggests that Sprig Ware was a specialised funerary pottery. The corpus from Tell Shelgiyya probably represents the greatest quantity of this ware yet found, so Tell Shelgiya — for the moment at least — is probably the type site for Sprig Ware.

The one or two fragments of Sprig Ware from Shaikh Humsi Cemetery and the larger quantities from Tell al-Hawa all appear identical (on close visual examination) in every respect to the Tell Shelgiya Sprig Ware, lending support to the suggestion that this ware was manufactured and exported from Tell Shelgiya. An analysis of trace elements from all three sites, together perhaps with samples from elsewhere (most notably, Tepe Gawra), would be a particularly worthwhile exercise to test such a suggestion. If the suggestion were confirmed, the location of Tell Shelgiya is well sited for such a role: the foothills of the Anatolian and Zagros mountains and routes entering them are just to the northeast, the Jazira plain is to the west, and the river provides access to the Tell Abu Dhahir area and greater centres of population to the southeast. It thus lies in a centre for communications. It would also indicate a higher degree of regional specialisation for the Early Uruk period than has hitherto been evident.

Bibliography

Ball, W.

1990a 'The Tell al-Hawa Project. The Second and Third Seasons of Excavations at Tell al-Hawa, 1987–88' *Mediterranean Archaeology* 3: 75–92.

1990b 'Tell al-Hawa and the Development of Urbanization in the Jazira' *al-Rāfidān* 11: 1–28.

Ball, W. and Pagan, M.

1996 'Tell Shelgiyya' in Ball *et. al.* 1996.

Ball, W., Simpson, St j. and Tucker, D.
1996 'Other Recorded Sites' in: Ball *et. al.* 1996.

Ball, W., Tucker, D. and Wilkinson, T. J.
1989 'The Tell al-Hawa Project. Archaeological Investigations in the North Jazira 1986–87' *Iraq* LI: 1–66.

Ball, W. *et. al.*
1996 *Ancient Settlement in the Zammar Region. Excavations by the British Archaeological Expedition to Iraq in the Saddam Dam Salvage Project, 1985–86* (London).

Fujii, H.
1981 'Preliminary Report of Excavations at Gubba and Songor' *al-Rāfidān* II.

Ii, H.
1993 'Catalogue of Pottery from Tell Gubba: Level VII' *al-Rāfidān* XIV: 209–66.

Lloyd, S.
1938 'Some Ancient Sites in the Sinjar District' *Iraq* V, 2: 123–42.

Oates, J.
1985 'Tell Brak: Uruk pottery from the 1984 season' *Iraq* XLVII: 175–86.

Schwartz, G. M.
1988 *A Ceramic Chronology grom Tell Leilan Operation I* (New Haven & London).

Simpson, St J.
(forthcoming) *Ancient Settlement in the Zammar Region. Excavations at Tell Abu Dhahir.*

Tobler, A. J.
1950 *Excavations at Tepe Gawra* (Philadelphia).

Watkins, T.
1987 *From the Pieces of the Past* (Edinburgh).

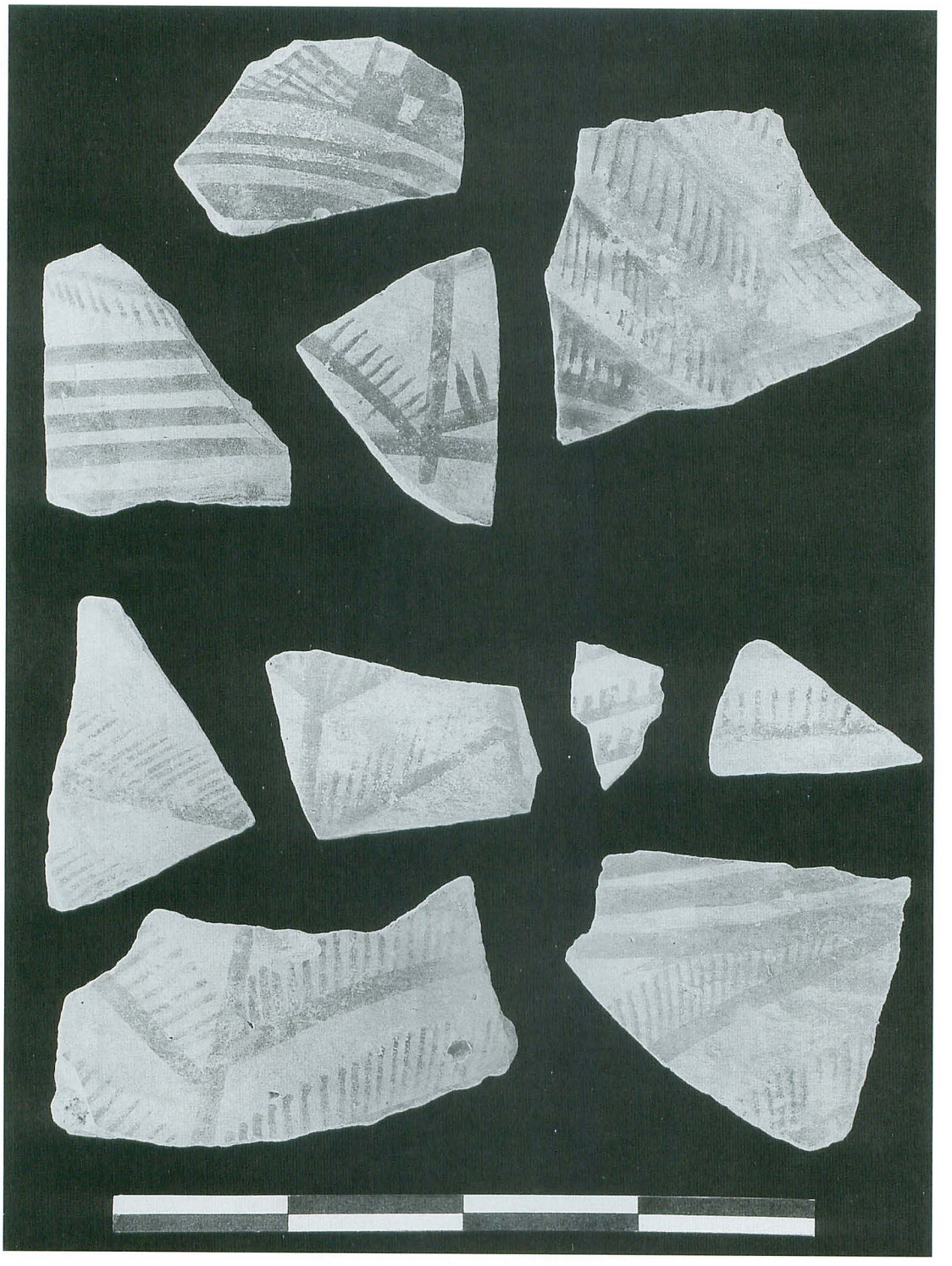
Pl. 1



a Tell Shelgiyya main mound (Mound A).

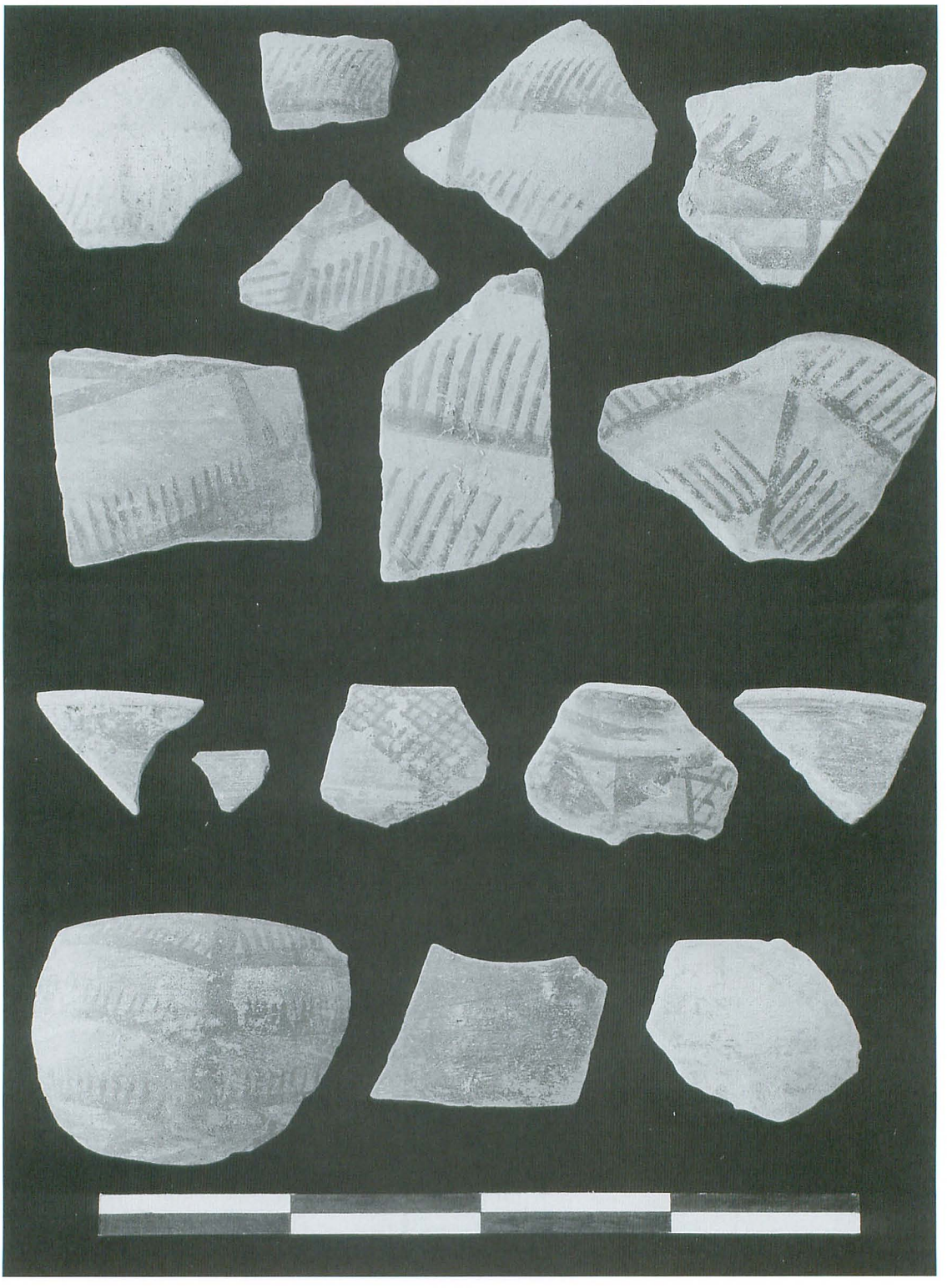


b Tell Shelgiyya smaller mound (Mound B) with the H and J trenches where most of the Sprig Ware was found in the foreground.



Sprig Ware body sherds.

Pl. 3



Sprig Ware body sherds.

EINIGE BEMERKUNGEN ZUR CHRONOLOGIE DER FRÜHDYNASTISCHEN ZEIT

Barthel HROUDA*

Da Herr Professor Hideo Fujii zur Zeit in Kisch arbeitet oder gearbeitet hat und zwar in Schichten des 3. Jahrts. v. Chr. erschien es mir angebracht, gerade dazu einen kleinen Artikel zu chronologischen Fragen für die Festschrift beizusteuern. Mit Herrn Professor Fujii verbindet der Autor einen langjährige Freundschaft, die sich auch auf seinen Schüler Ken Matsumoto übertragen hat.

Dieser Beitrag stellt auch nur ein Resüme der bisher gemachten Vorschläge zur relativen Chronologie des 3. Jahrts. v. Chr. und zu ihrer Begriffsbildung dar.

Zunächst sei festgestellt, daß bereits 1935 A. Moortgat den Versuch unternommen hat, ein vornehmlich für Babylonien gültiges Chronologie-Schema zu begründen[1]. Er verwendete **hierfür historische Namen oder Begriffe wie "Mesilim" oder "Ur I", mit denen man auch** markante archäologische Denkmäler verbinden konnte[2]. Es ergab sich folgendes Schema:

1. 1. Übergangszeit (von der Dschemdet-Nasr-Zt. zur Mesilim-Zeit)
2. **Mesilim-Zeit**
3. 2. Übergangszeit
4. **Ur I-Zeit**

Über stilistische Vergleiche und auf der Grundlage stratigraphischer Befunde, so hauptsächlich aus dem Königsfriedhof von Ur konnte er den einzelnen Phasen weitere **Bildwerke zuweisen. Der Mesilim-Zeit Rollsiegel mit abstrakten Darstellungen**[3], von denen sich als weiterentwickelt und plastischer solche der sog. Imdugud/Sukurru = Anzu/Sùd-Gruppe unterschieden. Sie setzte er daher auch wegen der jüngeren Schriftstufe in seine 2. Übergangszeit. Dagegen vor den "Mesilim"-Rollsiegeln ordnete er die Abrollungen aus dem Seal-Impression-Stratum 8/6–4 von Ur ein, die besonders nach ihren Kompostionen älter zu sein schienen als die der Stufe/Phase 2[4]. Die Beurteilung der Komposition wurde von ihm hauptsächlich an dem sog. Figurenband vorgenommen, ob besonders gekonnt wie in der Mesilim-und der 2. Übergangszeit oder weniger, so vermeintlich in der 1. Übergangszeit. Bei dem Figurenband handelt es sich ***ausschließlich*** um eine Reihung von Tieren und Menschen/Helden, die aufrecht stehen, auch die Tiere, die miteinander zu Gruppen "verzahnt" sind. Eine einfache Reihung von beispielsweise schreitenden Tieren ist ***kein*** Figurenband.

Schwierigkeiten ergaben sich bei den Bildwerken von Lagasch, sie mit denen von Ur zeitlich zu parallesieren und in Ur selbst mit der Datierung des Königsfriedhofs bzw. mit seiner Stellung zur I. Dynastie von Ur.

Vor der 1. Übergangszeit lag die Dschemdet Nasr- und die Uruk-Zeit, letztere, aber in gewisser Weise auch die erste genauer während der 30 Jahre durch die deutschen Ausgrabungen in Uruk/Warka bekannt geworden. Der Dschemdet Nasr-Zeit/Periode oder Stufe entsprach vom Duktus der in Dschemdet Nasr bei Kisch gefundenen Texte der Schriftstufe von Eanna/Uruk III b. Da nun keine Unterschiede zwischen dem älteren c und dem jüngeren a zu entdecken war, wurde die gesamte Bauschicht

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1) A. Moortgat, Frühe Bildkunst in Sumer, MVAeG 40 (1935). Die 1. Zwischenzeit wurde von ihm aber erst später eingefügt.

2) **J. Börker-Klähn, Die Stellung Mesilims und der mit ihm verbundene Stilbegriff, BaM** 4 (1981) S. 33 ff.

3) A. Moortgat, Vorderasiatische Rollsiegel (Berlin 1940) Taf. 13–15.

4) L. Legrain, Ur Excavat. III. Archaic Seal-Impressions (London 1936) Taf. 8–26.

III (c-a) in Eanna/Uruk als Dschemdet Nasr-zeitlich bezeichnet. Die dabei an einigen Stellen von Eanna/Uruk noch zusätzlich festgestellte Bauphase II wird jetzt nicht mehr berücksichtigt. Für A. Moortgat stellte die Dschemdet Nasr-Zeit den Höhepunkt des sumerischen Kunstschaffens dar, das sich von der späten Uruk-Zeit bis hierhin ohne größere Veränderung fortsetzte[5]. Mochte dies für die Bildkunst damals noch stimmen, in der Architektur ließ sich diese Feststellung schon nicht treffen, denn in Eanna/Uruk wurde die Tradition der großen Anlagen zu ebener Erde durch einen Terrassenbau/ Zikkurrat abgelöst[6]. Aber gerade in der Religion zeigt sich am deutlichsten ein kultureller Umbruch.

Aufgrund seiner Befunde und Erkenntnisse bei den Ausgrabungen im Diyala-Gebiet, besonders während der 2. Hälfte der 30 Jahre erstellte der Amerikaner Henry Frankfort ein anderes neues, mehr abstracktes System und nannte die Gesamtperiode nach ägyptischen **Vorbildern** (H. Frankfort war von Hause aus Ägyptologe) "Early Dynastic = Frühdynastisch". Als ganz neu kann man aber sein System nicht bezeichen, denn es deckte sich mit dem von Moortgat.

1. 1. Übergangszeit = ED I
2. Mesilim-Zeit = ED II
3. 2. Übergangszeit = ED III a
4. **Ur I-Zeit** = ED III b

Die von Th. Jacobson vorgeschlagene Unterteilung von ED III a zusätzlich in "Protoimperial" als letzte Stufe wurde später aufgegeben[7].

Soweit so gut! An diesen beiden Hauptchronologischen Systemen und in ihren Bezügen zueinander hat sich lange Zeit nichts geändert bis zum Jahre 1960, als E. Strommengers Untersuchung zur Rundplastik erschien[8].

Bevor wir uns den neuen Ergebnissen zuwenden, sollte man noch einmal festhalten, daß beide Chronologie nur in Babylonien Geltung haben und nicht ohne weiteres auf andere geographische Räume und Kulturen übertragen werden können. Schon allein die Übernahme der Ergebnisse und Folgerungen aus den Ausgrabungen im Diyala-Gebiet, an der Peripherie zu Mesopotamien gelegen, auf den sumerischen Bereich, ist problematisch.

Frau Strommenger stellte bei ihrer Untersuchung fest, daß der spätere Stil der 2. Übergangszeit im Diyala-Gebiet bereits während der ED II nachgewiesen werden kann[9]. Infolgedessen verlagerte sie den Anfang des Imdugud/Sukkurru = Anzu/Sùd-"Stils, von ihr nach seinem häufigen Auftreten in Fara als Fara-Stil bezeichnet nach oben in die jüngere Phase von ED II. Ungefähr zur gleichen Zeit hat D.O.Edzard wahrscheinlich machen können, daß die Leitfigur "Mesilim", König von Kisch, vertreten u.a. durch die berühmte Weihkeule in Tello, eher am Ende seiner eigenen Periode anzusetzen sei als "mittendrin". So ergab sich eine Zweiteilung von ED II in früh und spät oder ED II a un d ED II b, wobei ED II b zusammen mit ED III a oder der der 2. Zwischenzeit eine Einheit bildete, nach Strommenger Fara/Ur I-zeitlich, und der Name Mesilim muß als historische Leitfigur für die 2. Stufe nach Moortgat entfallen. Besser geeignet wäre nun dafür Gilgamesch, aber nach den Erfahrungen mit Mesilim scheut man davor zurück, ihn als Namenspatron für eine Periode zu verwenden. Außerdem paßt eine solche Benennung auch nicht mehr in die Vorstellung unserer Zeit.

Das ist die eine bzw. sind die beiden Neuerungen. Die dritte verdanken wir J.Boese, der durch eine neue Lesung der Perle aus dem Schatzfund in Mari nachweisen konnte, der 1. König der Ur I-Dynastie, Mesanepada, der Sohn des im Ur-Friedhof bestatteten Herrschers Meskalamdug war[10]. Damit ist dieser reiche Fundkomplex mit der 1. Dynastie von Ur eng verbunden und kann der späten ED IIIa

5) A. Moortgat . Frühe Bildkunst und in seinen späteren Werken. Siehe dazu B. Hrouda BaM 5 (1970) S. 33 ff.

6) H.J.Lenzen, Die Entwicklung der Zikurrat (Leipzig 1941) S. 11 ff.

7) Vgl. E. Porada in R.W. Ehrich (Hrg.) Chronol. in Old World Archaeology (Chicago 1965) S. 159 ff.

8) E. Strommenger, Das Menschenbild in der altmesop. Rundplastik von Mesilim bis Hammurapi, BaM 1 (1960) S. 1 ff.

9) E. Strommenger a. O. S. 16 u. Tab. 2.

10) J. Boese, Mesanepada und der Schatz von Mari, ZA 68 (1978) S. 6 ff.

zugewiesen werden. Leider ist es immer noch nicht gelungen, die Dynastie von Lagasch sicher mit der 1. Dynastie zu verbinden, aber man darf annehmen, daß ihr erster König, Urnansche, zur gleichen Zeit wie Meskalamdug oder Mesanepada gelebt bzw. regiert hat.

Auch im oberen Teil der frühdynastischen Chronologie hat sich einiges geändert. N. Karg konnte 1981[11] nachweisen, das die Mehrzahl der Abrollungen aus dem SIS 8/6-4-Komplex in Ur nicht nach ED I, sondern als Lokalstil nach ED II gehören. Damit wird die Denkmälerzahl für diese Periode (ED I) immer geringer, neben ein oder zwei Weihplatten aus Nippur, die aber nun unter dem Gesichtspunkt der Neuordnung der ED I/II-Glyptik von Ur wohl auch anders datiert werden müssen, verbleiben neben den Siegeln im sog. Brokat-Stil nur drei Bildwerke in ED I, die "Figure aux plumes", der sog. Kudurru des Uschumgal und der Anzu aus Chafadschi[12]. Lediglich an Keramik verfügen wir über zahlreiche Exemplare des sog. solid footed goblet[13]. Da nun dieses Gefäß auch einige der frühen Beterfiguren in ihren Händen halten, müssen wir fragen, ob nicht diese Figuren ebenfalls der ED I-Zeit angehören, so die beiden großen Statuetten aus dem Hortfund in Tell Asmar[14]. Diese Figuren, eine Trias, nehmen überhaupt eine Sonderstellung ein, die aber inhaltlich gedeutet wurde. Warum sollten sie nicht älter als die Mehrzahl der anderen deponierten Statuetten gewesen sein? Eine Umdatierung der frühdynastischen Beterfiguren aus ED II findet sich jetzt auch in der jüngsten Ausgabe von R.W. Ehrichs Chronolog. in Old World Archaeology 1992 auf S. 103 f.

Diese solid footed goblet tauchen bereits nach D. Sürenhagen in Eanna/Uruk III auf, was ihn in seiner, bisher noch ungedruckten Habilitations-Schrift[15] auf den Gedanken gebracht hat, die Bauphase III von Eanna der ED I-Zeit zuzuweisen. Damit wäre in der Konsequenz die Kultur der Dschemdet Nasr- Zeit keine sumerische mehr, zumindest nicht mehr ihr Höhepunkt[16]. Man muß natürlich mit solchen Zuweisungen sehr vorsichtig sein.

In Nordmesopotamien, wo es keine Zeugnisse der Dschemdet Nasr-Zeit gibt, versucht man auf der anderen Seite, die Uruk-Phase als "Latest Uruk-period" mit der Dschemdet Nasr-Zeit deckungsgleich zu bringen[17]. Offenbar ist man sich nicht klar darüber, daß der Begriff "Uruk" ein kultureller ist und mit dem Sumerertum zusammenhängt. In der Konsequenz würde dies also bedeuten, daß auch die Spätzeit, die Dschemdet Nasr-Phase, dazu gehört, was, wie wir gesehen haben, im Süden nun nicht mehr zutrifft, denn die Frühdynastische Periode und deren Erzeugnisse sehen wir jetzt als von den frühen Semiten geprägt.

Genauso so "unheilvoll" hat sich die Begriffbildung "Obed 1" für die Eridu-Phase und "Obed 2" für die Hadschi Mohammed-Phase in Bezug auf das wirkliche Obed (I u.II, jetzt 3 u.4) ausgewirkt, denn wer sagt uns denn, daß alle vier Perioden kulturell eine Einheit bilden im Sinne des alten Begriffs "Obed" ? Ich z.B. könnte mir vorstellen, daß neu "Obed 1 und 2" durchaus noch zu einer älteren Kultur gehören.

Für die Frühdynastische Periode und für eine moderne Chronologie wäre es gut, wenn neue Ausgrabungen im Kerngebiet, also in Südmesopotamien, neue Erkenntnisse dazu beisteuern würden. Vielleicht gelingt dies in Kisch !

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11) N. Karg, Untersuchungen zu älteren frühdynastischen Glyptik Babyloniens, BaF 8 (1984) S, 15 ff. Wichtig ist auch seine Rez. zu H.P. Martin, Fara in ZA 84/1, S.

12) A. Moortgat, Die Kunst des Alten Mesopotamien (Köln 1967) Taf. 30–34. 37.

13) P. Delougaz, Pottery from the Diyala Region, OIP LXIII (Chicago 1952) Taf. 46.

14) A. Parrot, Sumer (München 1981) Taf. 127–28.

15) Untersuchungen zur realtiven Chronologie Babyloniens und angrenzender Gebiete von der Ubaid-Zeit bis zum Beginn der Frühdynast.II-Zeit. Unegdruckte Habil.-**Schrift (Heidelberg 1989)**.

16) Vgl. B. Hrouda, BaM 5, S. 33 ff.

17) Vgl. dazu M.R. Behm-Blancke in Festschrift Nimet Özgüc (Ankara 1993) auf S. 75 ff. und seine Kritik dazu.

AFTER THE ARCHIVE: EARLY DYNASTIC I OCCUPATION AT JEMDET NASR, IRAQ

Roger J. MATTHEWS*

The mounds of Jemdet Nasr in south central Iraq are justly famous for the collection of protohistoric tablets recovered from the larger of the two mounds in the course of excavations by Stephen Langdon, Ernest Mackay and Louis Watelin in the 1920s (Langdon 1928). Written in a protocuneiform script which bears an as yet uncertain relation to the Sumerian language, well over 200 tablets were recovered from a large building which also yielded a distinctive assemblage of painted pottery and cylinder seals with stylised designs (Mackay 1931). At the time of its discovery this material culture assemblage was seen as distinct enough to represent a cultural timespan, the Jemdet Nasr period, chronologically situated between the Uruk and Early Dynastic periods. In approximate terms, the Jemdet Nasr period was understood to cover a period of some two centuries around the turn of the fourth to third millennia BC. Later difficulties in defining and identifying the cultural markers of the Jemdet Nasr period led to some doubt about its existence (Finkbeiner and Röllig 1986), but more recent work at Nippur, Fara and again at Jemdet Nasr has tended to support the existence of such a period, be it brief and regionally restricted (Martin 1988; Matthews 1989; 1990; Wilson 1986). In addition, new publications of the textual and other material from Jemdet Nasr have helped our comprehension of the significance of this cultural assemblage (Englund and Grégoire 1991; Matthews 1992; 1993).

It is perhaps less well known that the site of Jemdet Nasr continued to be occupied into the first part of the Early Dynastic period, and it is the remains of this period with which this paper is concerned. It is felt to be fitting to offer a paper on this theme as a tribute to Professor Fujii in view of his important work at the site of Tell Gubba in the Hamrin region of Iraq, where excavation revealed occupation largely contemporary with that at Jemdet Nasr.

In the autumns of 1988 and 1989 two seasons of fieldwork were conducted at Jemdet Nasr by the British School of Archaeology in Iraq. The general aim of this renewed work at the site was to set the remarkable finds of the 1920s excavations within a more rigorously defined archaeological framework. The recording of the two seasons in 1926 and 1928 was less than satisfactory, so that we had little real idea of the true contexts within which the protocuneiform tablets and other items had been located. Our objective, therefore, was to relocate the large building from which the tablets had been excavated and to investigate previously unexcavated parts of this building and adjacent deposits. In the course of these activities it was soon established that occupation at Jemdet Nasr was not restricted exclusively to the Jemdet Nasr period.

Investigations across Mound B, the larger of the two mounds which make up the site, showed that as far as surface remains are concerned the southwestern region of the mound includes Late Uruk deposits, while the northern part of the mound, within which the large building is located, is principally of Jemdet Nasr date on the surface (Fig. 1). Across the centre of the mound, however, are traces of Early Dynastic I occupation, suggesting the existence of a small settlement of this date after the abandonment of much of the rest of the mound.

Before examining the Early Dynastic I evidence from Mound B, we can mention the contemporary evidence from Mound A, the smaller mound to the west. Mound A is capped by a baked brick building of uncertain date, but perhaps Neo-Babylonian or Parthian, underlying which are Late Ubaid deposits.

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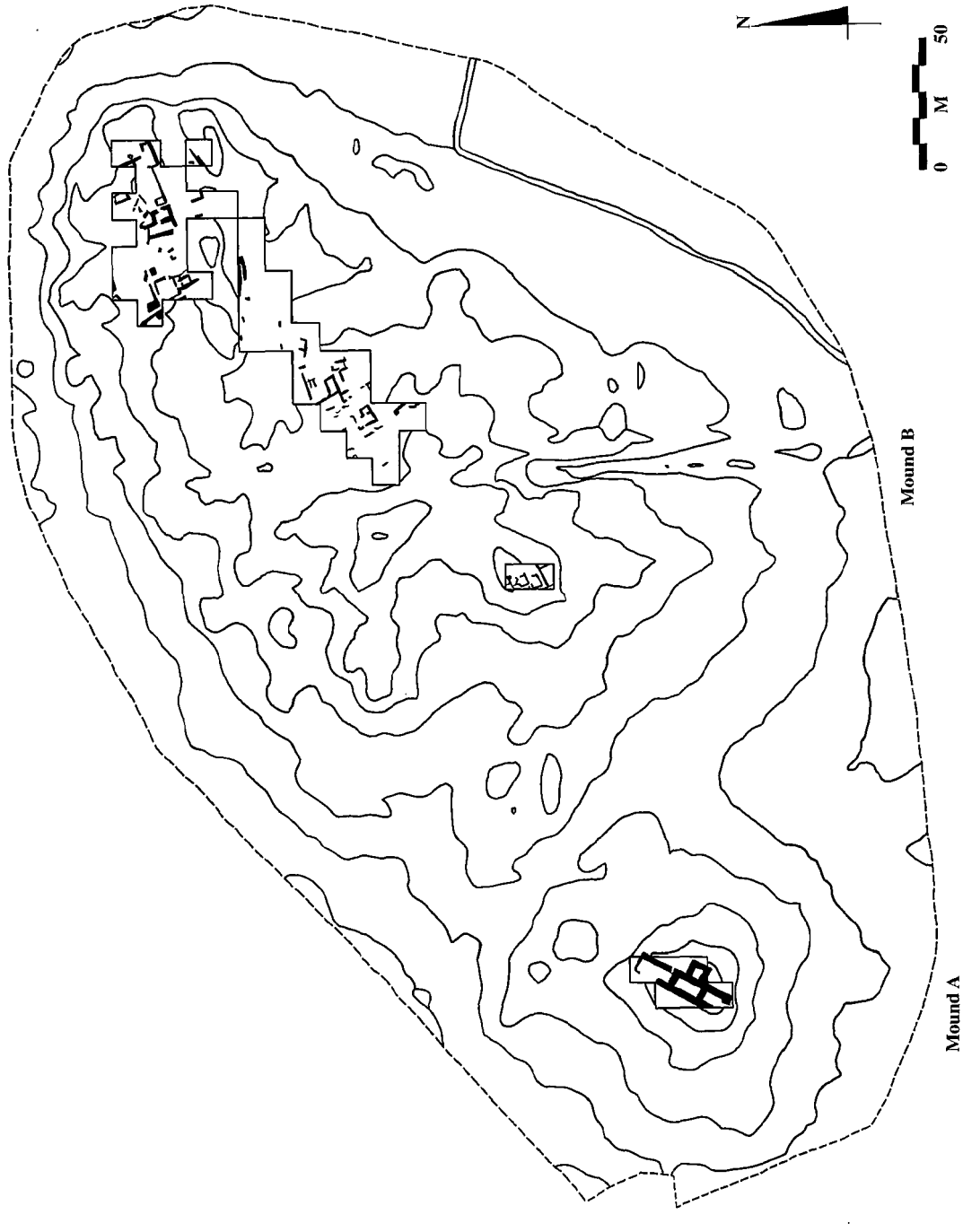

Fig. 1 Contour plan of Jemdet Nasr, Mounds A and B, showing planned surface architecture.

Cut into the Ubaid deposits, however, is at least one burial of Early Dynastic I date, excavated by us in 1988. This grave yielded a collection of artefacts, Figs. 2–3, including several stone vessels, carnelian and shell beads, marble frogs with inlaid eyes, and a stamp seal with a design of cats, similar to an example from Gubba (Fujii 1981: Fig. 22:16). The stone vessels, in particular, have good Early Dynastic I parallels from Fara, Kish, Telloh and Ur (for discussion of this burial, see Matthews 1989: 244–246). No Early Dynastic I structures were identified on Mound A and it seems likely that the burial was placed there by the contemporary inhabitants of Mound B, to which we may now turn.

In our search for the 1920s large building we soon uncovered a series of walls in the northeast corner of Mound B which had clearly been previously excavated and which we interpret as indeed being the building excavated by Langdon, Mackay and Watelin in 1926 and 1928 (Fig. 4). Many sherds of polychrome painted pottery support this interpretation. The southern limit of the building is marked by a substantial boundary wall or platform only partly accessible under the spoil heaps from the old



Fig. 2 Early Dynastic I grave from Mound A. Grave goods.

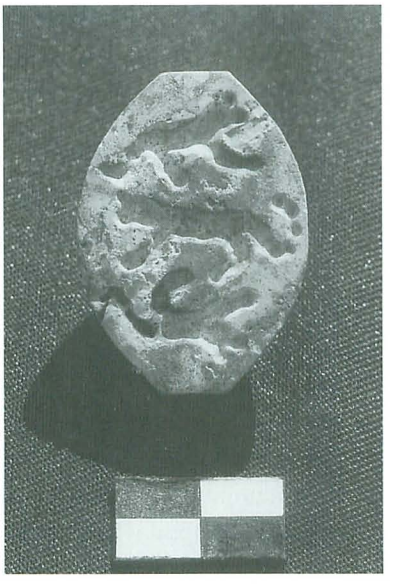

Fig. 3 Early Dynastic I grave from Mound A. Stamp seal.



Fig. 4 Mound B. Surface architecture in NE Area.

excavations. This platform comprises two parts, the northern section constructed of *Riemchen-nahe* bricks, 22 x 9.5 x 8.5 cm, while the southern section consists of plano-convex bricks, 20 x 9.5 x 6.5, neatly laid in herringbone fashion. The evidence of the bricks, then, suggests that use of the platform spans both the Jemdet Nasr and Early Dynastic periods. As we have stated, the main large building excavated in the 1920s lies directly to the north of the platform, its exact relationship obscured by previous excavation and by the location of the 1920s spoilheaps. The area to the south of the platform, however, had not previously been excavated and upon further investigation was shown to comprise an extensive burnt rubbish dump, a section of which we excavated in area 4C88.



Fig. 5 Early Dynastic I rubbish dump. Narrow-based cup.

The rubbish dump itself proved to have more than one phase, here considered from the lowermost upwards. Underlying the dump is a stretch of well-built wall, 1.5 m wide and constructed of *Riemchen* bricks, with associated plaster floors and deposits rich in bevelled rim bowl sherds. This evidence, admittedly from a restricted area, may point for the first time to the existence of a Late Uruk precursor to the nearby large building of Jemdet Nasr date excavated in the 1920s. Overlying these probable Late Uruk deposits, a distinct series of dumping levels was discerned, yielding material which dates the lower rubbish phase to the Jemdet Nasr period. Pottery from the lower dump phase includes conical bowls and other sherds comparable to those recovered from the area of the 1920s large building, as well as a "bolas-stone" with grooved lines, typical of the Jemdet Nasr period (Matthews 1989: Fig. 5:1). The lower rubbish phase thus appears to be contemporary with the large building, and it is likely that the rubbish was thrown over the edge of the platform upon which that building stood.

The upper phase of rubbish represents a sharp break, with more heavily burnt deposits and a change in the material culture assemblage. These upper deposits had built up against the outer, plano-convex

brick, section of the platform. The pottery is consistent throughout the many stratified layers of the upper phase. The commonest form is a narrow-based cup with fine rim, found in great numbers (Fig. 5). Very similar vessels have been found in at least approximately contemporary levels at Gubba (Fujii 1981: Fig. 19:5) and Ahmad al Hattu (Sürenhagen 1979: Fig. 4:1). It is believed that these vessels are the first precursors of the solid-footed goblets which come to typify the Early Dynastic I period. Other pottery forms of the upper phase include large bowls with incised or painted rims and decoration on the body below the rim. A range of decorative techniques is employed, often on the same vessel, such as paint, reserved slip, impression and excision. Many sherds appear to be truly transitional between Jemdet Nasr and Early Dynastic I types, suggesting that the upper phase represents the very beginning of the Early Dynastic I period in this region (pottery from the upper phase of the dump is illustrated and discussed in Matthews 1989: 237–42; 1990: 32–34).

An important collection of clay sealings with seal impressions was recovered from the upper phase of the dump. In total, 193 sealings were recovered, many only as small fragments with few identifiable markings. A selection of the seal impressions is illustrated in Figs. 6–7. Iconographically speaking these impressions bear close comparison with several other seal impression assemblages. Most notably, the seal impressions on the protocuneiform tablets from Jemdet Nasr itself have many points of comparison with this new group of impressions, both in matters of general style and as regards specific motifs such as trees, horned quadrupeds, naked humans, rosettes and assorted filler elements (for the tablet seal impressions, see Matthews 1993). Other comparable groups include impressions on tablets and sealings from Uruk dating to the Late Uruk and Jemdet Nasr periods (Brandes 1979), impressions on Jemdet Nasr date tablets from Tell Uqair (Lloyd and Safar 1943), impressions on sealings from an Early Dynastic I rubbish dump at Fara (Martin 1988; Matthews 1991), and impressions on sealings from Early Dynastic I levels at Nippur (Hansen 1971). The large corpus of sealings from the Seal Impression Strata at Ur are not so directly comparable and, and as judged by their pottery and textual associations, are certainly later in the Early Dynastic I period than the material from Jemdet Nasr (Legrain 1936; Matthews 1993).

One of the main points of interest of the Early Dynastic I rubbish dump sealings from Jemdet Nasr is their function. As we have stated, very similar, but not identical, seal impressions are attested on one third of the protocuneiform tablets from the site. The Early Dynastic I impressions, however, are not on tablets but on clay sealings, pieces of clay used to secure commodity containers or store-room doors. A range of containers is attested, including pots, packages and baskets, while some pieces had sealed store-room doors. We should not overstress this aspect, but it is worth noting that the only collection of Early Dynastic I tablets, from Ur, is completely lacking in seal impressions, a trait also found in the case of later Early Dynastic tablets from Fara, Abu Salabikh and elsewhere. It is further noteworthy that, with the exception of Uruk, we do not find collections of commodity and store-room sealings pre-dating Early Dynastic I in south Mesopotamia. These pieces of evidence, patchy and incomplete as they are bound to be, suggest a major shift in sealing practices in south Mesopotamia during the early part of the third millennium BC, with the practice of sealing diverging from that of writing. This shift may reflect the ever-increasing capability of writing to convey information without the need for iconographic supplementation in the form of seal impressions.

Rubbish always has a source, but we have not yet identified from where the Early Dynastic I rubbish at Jemdet Nasr originated. We assume that a building of some stature may be involved, perhaps a direct descendant of the large building of Jemdet Nasr date immediately to the north. To the south of the dump is an expanse of featureless silt, of unclear origin. To the southwest of the dump plano-convex brick architecture was planned and partly excavated in area 4C45. The 4C45 building survived to only a few courses in height. A burial, without grave goods, was located against one wall face, while a deposit of broken cups and vessels lay in the northeastern corner of a room (Fig. 8). A coherent pottery assemblage was recovered from this building, dominated by tall cups (Fig. 9) which we believe fall chronologically between the narrow-based cups of the rubbish dump at Jemdet Nasr and the fully-



Fig. 6 Early Dynastic I rubbish dump. Seal impressions. Scale 1:1.

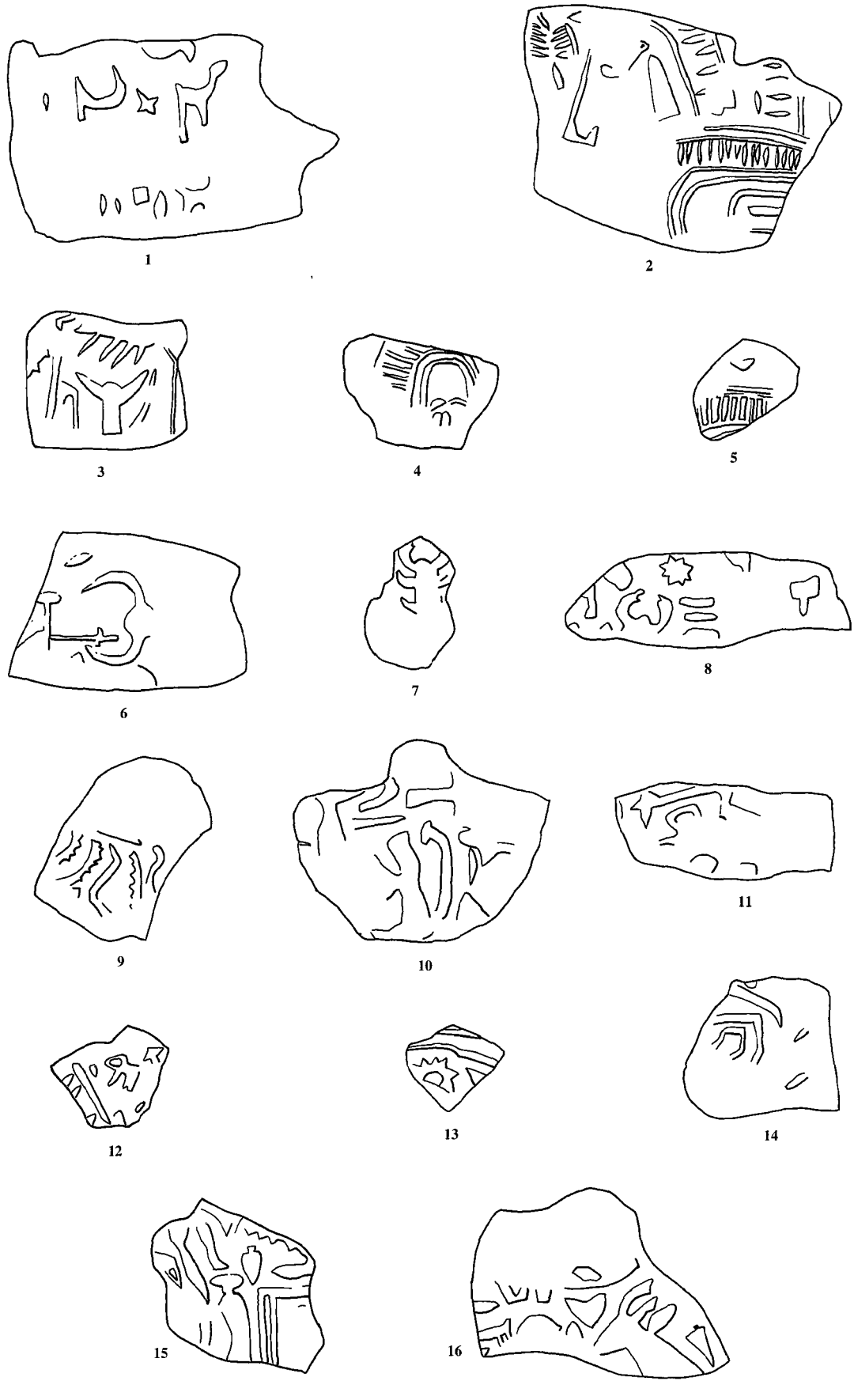

Fig. 7 Early Dynastic I rubbish dump. Seal impressions. Scale 1:1.



Fig. 8 Early Dynastic I building in 4C45. Deposit of vessels.

fledged solid-footed goblets also attested on the surface at Jemdet Nasr and at many other later Early Dynastic I locations in southern Mesopotamia. Two clay sealings with cylinder seal impressions were also retrieved (Fig. 7:15–16).

The importance of the Early Dynastic I material from Jemdet Nasr, briefly covered in this article, lies in its attestation of continued occupation at the site after the abandonment and possible destruction of the large administrative building from which the important collection of protocuneiform tablets was excavated in the 1920s. The rubbish dump and its clay sealings show the perpetuation of administrative activity at the site in the centuries immediately after the Jemdet Nasr period, complementing the evidence for a major occupation at Jemdet Nasr in the preceding Late Uruk period. These pieces of evidence help to place the extraordinary discoveries at Jemdet Nasr in 1926 and 1928 within a more rounded and satisfactory archaeological context, but it is sincerely to be hoped that at some date further work at Jemdet Nasr may substantially enhance this still fragmentary picture of the past.

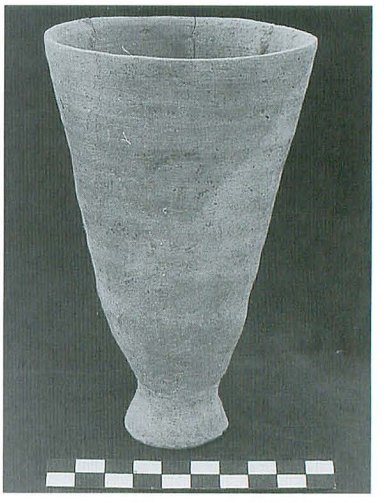

Fig. 9 Early Dynastic I building in 4C45. Tall cup.

References

Brandes, M.A.
1979 *Siegelabrollungen aus den Archaischen Bauschichten in Uruk-Warka*, (Freiburger Altorientalische Studien 3) Wiesbaden: Franz Steiner.

Englund, R.K. and Grégoire, J.-P.
1991 *The Proto-Cuneiform Texts from Jemdet Nasr. 1: Copies, Transliterations and Glossary*, (Materialien zu den Frühen Schriftzeugnissen des Vorderen Orients 1) Berlin: Gebr. Mann.

Finkbeiner, U. and Röllig, W. (eds.)
1986 *Gamdat Nasr: Period or Regional Style?* (Beihefte zum Tübinger Atlas des Vorderen Orients, Reihe B 62) Wiesbaden: Ludwig Reichert.

Fujii, H. (ed.)
1981 Preliminary Report on Excavations at Gubba and Songor, *al-Rāfidān*, 2: 1–242.

Hansen, D.P.
1971 Some Early Dynastic I Sealings from Nippur. In Mitten, D.G. (ed.) *Studies Presented to George M.A. Hanfmann*, Mainz: Philipp von Zabern, 47–54.

Langdon, S.
1928 *The Herbert Weld Collection in the Ashmolean Museum. Pictographic Inscriptions from Jemdet Nasr, Iraq*, (Oxford Editions of Cuneiform Texts 7) Oxford: Oxford University Press.

Legrain, L.
1936 *Archaic Seal Impressions*, (Ur Excavations 3) London: The British Museum.

Lloyd, S. and Safar, F.
1943 Tell Uqair. Excavations by the Iraq Government Directorate of Antiquities in 1940 and 1941, *Journal of Near Eastern Studies*, 2: 131–158.

Mackay, E.
1931 *Report on Excavations at Jemdet Nasr, Iraq*, (Field Museum of Natural History, Anthropology Memoirs I,3) Chicago: Field Museum of Natural History.

Martin, H.P.
1988 *Fara: a Reconstruction of the Ancient Mesopotamian City of Shuruppak*, Birmingham: Chris Martin.

Matthews, R.J.
1989 Excavations at Jemdet Nasr, 1988, *Iraq*, 51: 225–248.
1990 Excavations at Jemdet Nasr, 1989, *Iraq*, 52: 25–39.
1991 Fragments of Officialdom from Fara, *Iraq*, 53: 1–15.
1992 Defining the Style of the Period: Jemdet Nasr 1926–28, *Iraq*, 54: 1–34.
1993 *Cities, Seals and Writing: Archaic Seal Impressions from Jemdet Nasr and Ur*, (Materialien zu den Frühen Schriftzeugnissen des Vorderen Orients 2) Berlin: Gebr. Mann.

Sürenhagen, D.
1979 Ahmad al Hattu 1978, *Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin*, 111: 35–50.

Wilson, K.L.
1986 Nippur: the Definition of a Mesopotamian Gamdat Nasr Assemblage. In Finkbeiner, U. and Röllig, W. (eds.) *Gamdat Nasr: Period or Regional Style?* (Beihefte zum Tübinger Atlas des Vorderen Orients, Reihe B 62) Wiesbaden: Ludwig Reichert, 57–89.

RE-EXAMINATION OF THE NINEVITE 5 POTTERY FROM TELL THALATHAT NO. 5

Hirotoshi NUMOTO*

Introduction

A large quantity of the Ninevite 5 pottery from Tell Thalathat No.5 are kept in the museum of Tokyo University. These had been excavated by the Tokyo University Iraq-Iran Archaeological Expedition during October 1965 and January 1966 [Fukai *et al.* 1974] and were brought to the museum. The expedition were not allowed to bring out only some specimens recorded in an official list of Iraq. Only limited number of the materials among those kept in the museum, the total weight of which is about 1.2t, are illustrated on the report published by Tokyo University. The amount of the Ninevite 5 pottery in this collection is adequate to statistical analyses, which might become a key to consider problems of the Ninevite 5 pottery, such as chronology, pottery composition, usage, production system, and so on.

The present author started to study these Ninevite 5 pottery which have not been discussed yet in June 1994[1]. All the following work are included in this research: washing, joinning and restoration, drawing, counting and measuring. Throughout this research, it becomes clear that these materials contain the different types and shapes of Ninevite 5 wares which have not reported yet.

The main purpose of this paper is to illustrate the fine and painted wares which were not adopted for previous research. There are large number of middle and large-sized plain and coarse wares, further research is required to carry out statistical analysises and to discuss the characteristics of shapes and designs in details.

Outline of the research

(*Re-examination of the stratigraphy at Thalathat No.5: the date of the establishment of the granary*)

The present author examined all the records produced during the time of the excavations at Tell Thalathat No.5, such as the original drawings of structures and strata, field notes, the list of the findings, and the findspot labels which were put on the materials. The strata in the areas of R2, R4, and outside R10 and R17 (Grids D-II, III) which were located on the southern side of the granary have been kept so good that it is important to discuss the pottery derived from these strata in order to find the stratigraphy at Tell Thalathat No.5 (Fig. 2) [Ibid Pl.XLII, sections a-a',d-d'].

In the areas of R2 and R4 (Grid D-II), the phase belonging to the foundation level of the granary (level IV) was found. The stratigraphy of the accumulation in these areas was further divided into four levels. Moreover, there are two more phases in the accumulation between above the level IV and below the level III (Fig. 2, sections a-a', d-d'). These facts tell that the pottery from these accumulations might be stratigraphically classified into two groups each of which belongs to one of these phases (Fig. 2, phases a and b)[2]. Furthermore, large amount of pottery which have been found from the pure accumulation between above the level IV and below the level III enables us to judge the date of the granary being established.

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1) Professor Toshio Matsutani of the University of Tokyo gave me the opportunity to study these materials. This research was financially supported by the "Grant-in-Aid for the Encouragement of Young Scientists" for 1995 of the Ministry of Education, Science and Culture in Japan.

2) It is supposed that the lowest phase existing between the Levels III and IV in R2 (Fig. 2, section a-a', lowest floor of phase a) crresponds to the phase to which two large jars which had been fixed [Fukai *et al.* 1974: Pl.VIII-2].

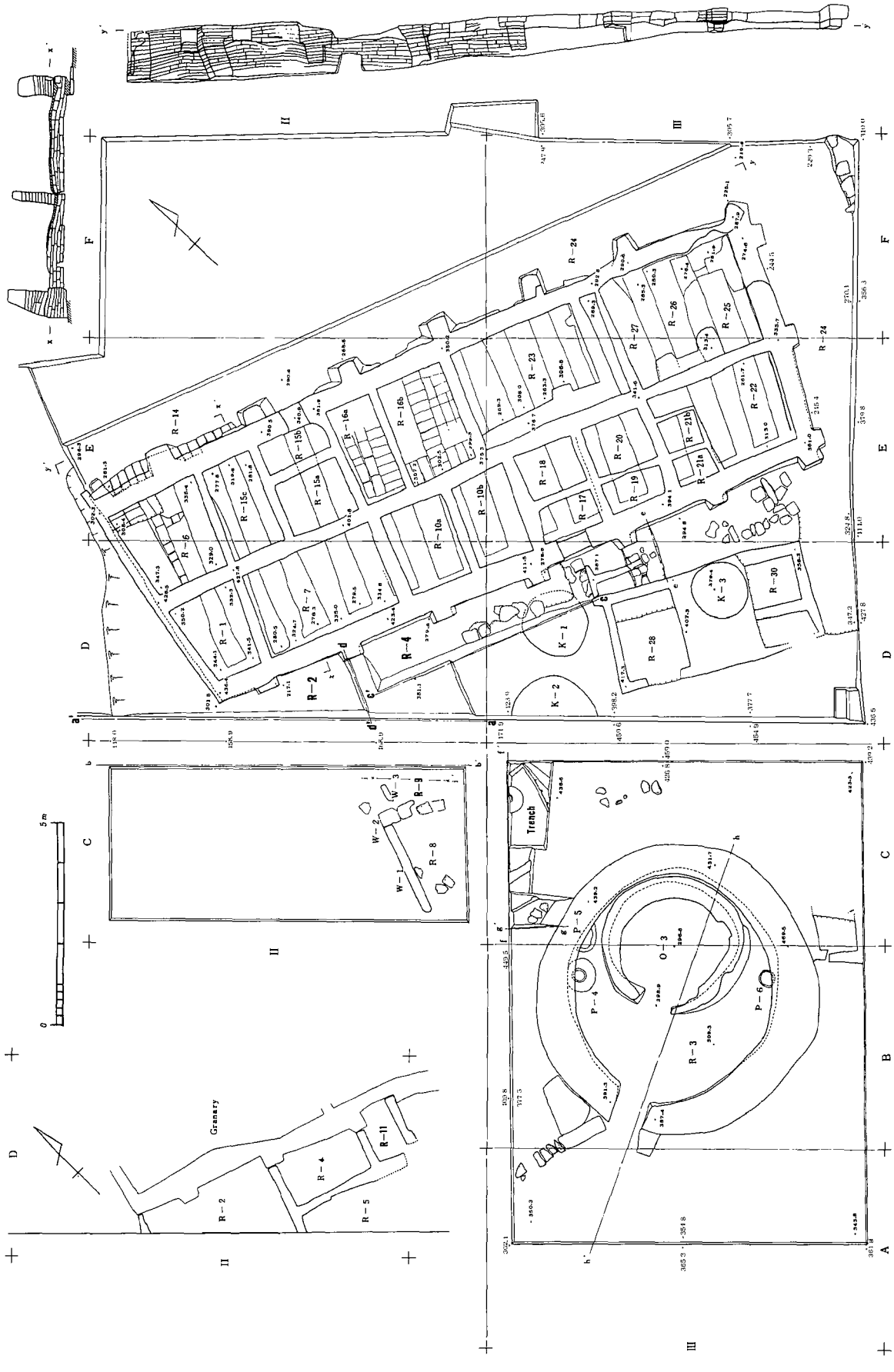

Fig. 1 Plan of Structures at Tell Thalathat No.5 (from Fukai *et al.* [1974: Pl. XLI]).

As mentioned in the excavation report [Ibid 19,20], the stratum directly under the granary at the R2 (Grid D-II) has been excavated 30–55cm in depth (Fig. 2, sections a-a', d-d'). However, excavators do not describe any features of the pottery from this stratum. The present author, therefore, examines the pottery derived from this stratum, which have not illustrated in the previous report. The stratum had been excavated for two days (1966/1/9 and 18). Among the specimens collected on the first day, eleven specimens are regarded as Ninevite 5 sherds. Most specimens found on the same day belong to the period between the Latest Ubaid and the Early Uruk Periods[3] (Fig.3) [Egami 1958: Figs 34–36, 51–53; Fukai *et al.* 1970: Figs. LXXI-LXXVII]. These painted and fine Ninevite 5 sherds show the typical features of the pottery in the "Painted and Early Incised Period". However, no Ninevite 5 pottery was found on the second day of the excavation. All of them belong to the period between the Latest Ubaid and the Early Uruk Periods (Fig. 3–16–19)[4]. Judging from these facts, the occupation levels belonging to the period between the Latest Ubaid and the Early Uruk Periods seem to have spread below the level of the granary. Moreover, no occupation levels belonging to either the Late Uruk or the Ninevite 5 Transitional Periods exist under the stratum of the granary. Therefore, it is clear that the granary was built during the time of the Ninevite 5 "Painted and Early Incised Period". This view is also supported by excavation report mentioning that the strata belonging to the Latest Ubaid or the Early Uruk Periods had been leveled (scraped) when the granary was built [Fukai *et al.* 1974: 12, 15].

The present author also re-examined the findspots of each material described in the excavations report [Ibid. list of plates]. The report lacks accurate descriptions of these findspots. For example, the pottery derived from the upper stratum of the level IV at the R2 and R4 are vaguely described as those from the "R2 and R4". This description, therefore, dose not difine from which strata these pottery

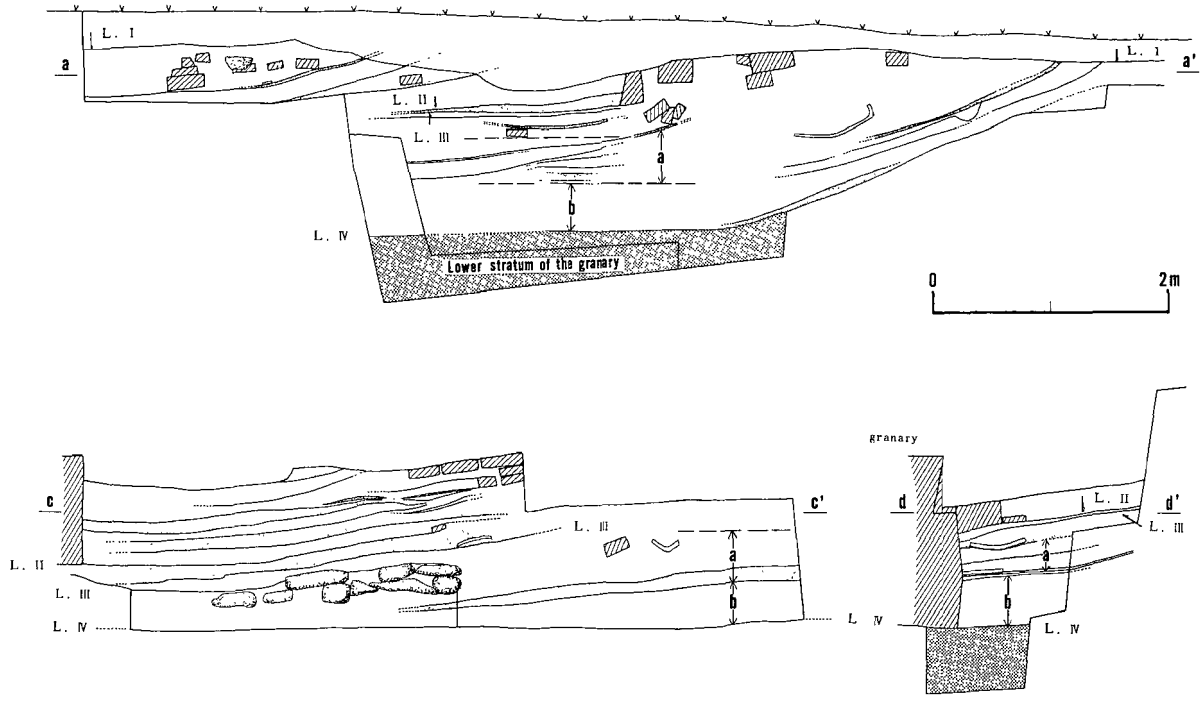

Fig. 2 Sections of R-2, 4 and Outside of R-10 and R17 (Grids D-II, III) at Tell Thalathat No.5 (from Fukai *et al.* [1974: Pl. XLII, sections a-a', c-c', and d-d']).

3) Ninevite 5 pottery (Fig. 3–20–25): two painted sherds, two ribbed or layered sherds, two fine ware sherds, one open bowl rim sherd, and four body sherds: 427.5g in total; the pottery of the Latest Ubaid or Early Uruk Period (Fig. 3–1–13): 33 sherds: 1796,8g in total; one Halaf (Fig. 3–15) and Hassuna sherd (Fig. 3–14).

4) 19 sherds: 1070.5g in total.

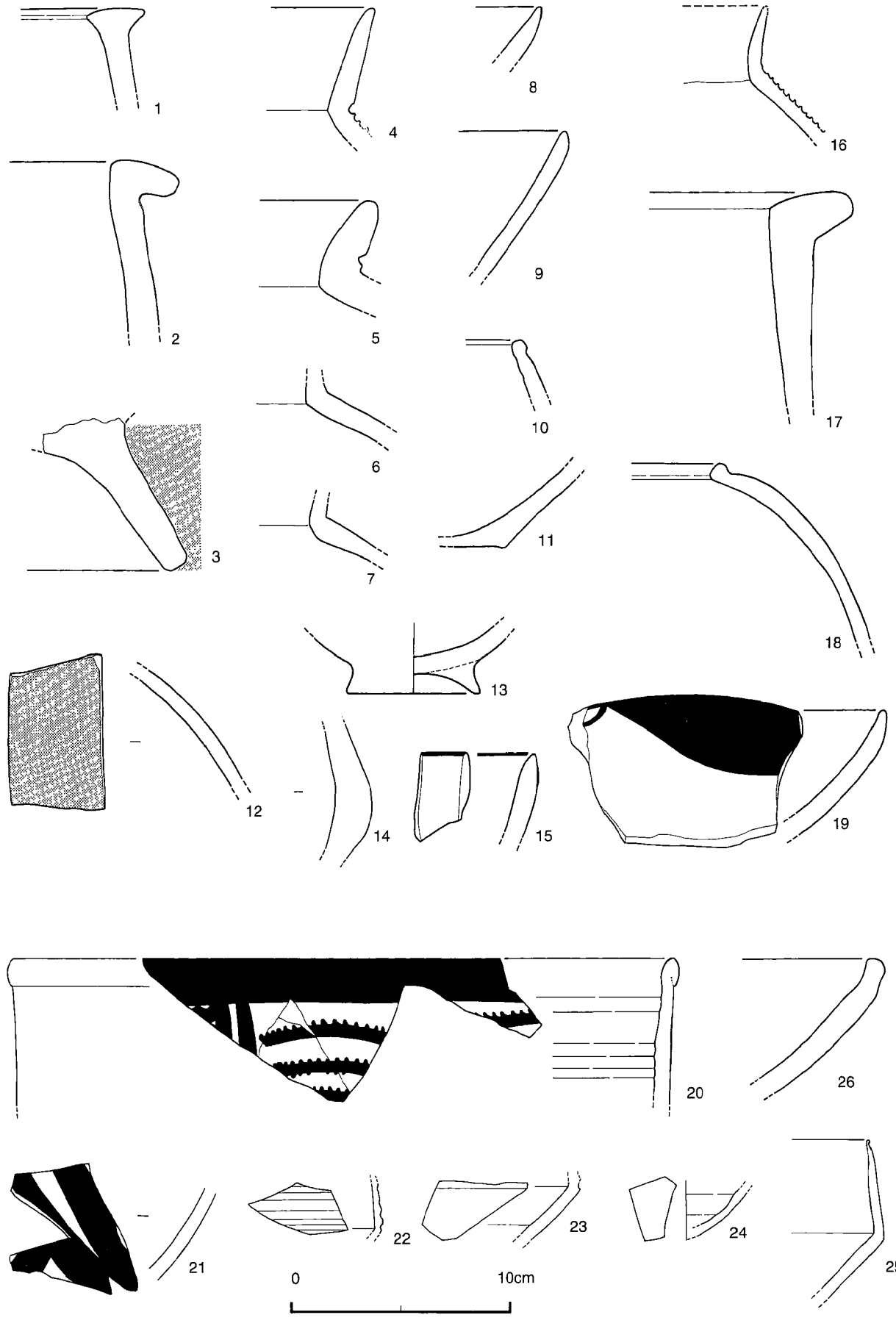

Fig. 3 Pottery from Lower Stratum of the Granary at Tell Thalathat No.5.

were excavated[5]. Similarly, the specimens which were described as those from the "R3" are unable to difine either the layer of the O2 (the upper level) or O3 (the lower level) they belong to[6]. The present author, therefore, shall specify the findsopts from where these published materials were derived.

The levels and structures of Tell Thalathat No.5 are classified into the following groups or stages (Figs.1, 2)[7]:

1. Surface soil (layer 1) (all the excavated grids)
2. The latest stage: Kilns of 1,2,3 and R3:O2 (the upper layer of R3)[8].
3. The later stage: pottery mainly from the levels II and III: R2a, b and c, R4a and b, R5, R11, R9, R8, outside R8, the layers 2 to 3 of Grid D-III, R28 and the layer 2 outside the granary (Grids E-II, F-II, E-III and F-III)
4. The earlist stage: pottery from the Level IV: a. outside the southern side of the granary (R2 and 4, outside R10, 17 and 19); b. outside the northern side of the granary (E-II, R14, F-II, F-III and R24)[9]; c. the granary: a.fill, b.on the floor; d. R3 (the lower level) and O3

This chronological order of the Ninevite 5 pottery at Tell Thalathat No.5 is important to present a temporal change of Ninevite 5 pottery assemblages, especially pottery shapes.

Analysis of the materials which have not been discussed

1) Whole amount of Ninevite 5 materials are some 1209kg. Total amount of each type of pottery are as follows:

a. Fine ware: 1580 sherds, 31.9kg,
b. Painted ware: 501 sherds, 46.6kg,
c. Middle to large-sized ware(jar and bowl), and coarse ware: 1130kg[10].

In addition to above, total weight of jypsum vessel is 25.4kg

2) A large number of ribbed or layered wares (carinated and footed bowls) and notched band wares exist among these materials (Fig. 5)[11]. Only fifteen of the former and twelve of the later type of ware are illustrated on the excavation report [Fukai *et al.* 1974: Pls. XLVII, XLIX, LVII]. Moreover, many types of fine and incised wares different from the published specimens, such as, horizontal grooved ware, ribbed ware with notched band, incised lugged jar, are included in these unpublished materials (Fig. 5). There are also painted wares which shape and design patterns are different from the published specimens (Fig. 6). Thus, it is apparent that many types of wares derived from Tell Thalathat No.5 have not been discussed yet.

3) Among these unpublished materials, there were many pieces of potsherds which are identified as a part of the published materials. It is, therefore, necessary to re-examine the shape of the specimens which are illustrated in the excavations report[12]. Furthermore, the painted or incised sherds some of

5) Fukai *et al.* 1974: Pl.XXIX-1–4, 9, 14, 20, 21, 22, 25, XXIX-2–2,4, 6, 16, 17, 19, XXX-1–4, 13, 14, 15, 17, 21, XXX-2–1. 15, XXXI-1–4, XXXIII-1–5, 12, XLVII-1, 14, XLVIII–2, 3, 4, 10, 12, 19, 22, XLIX-14. 16. 26, L-2, LI-13, 16, LII-11, LIV-3, 4, 7, 9. LVII-6, 10.

6) Fukai *et al.* 1974: Pls.XXIX-2–22, XXX-2–19, XXXI-1–10, XXXIII-3–3, XLVII-6, 11, 13, XLVIII-21, XLIX-1,10, 12, 24, 25, L-3, LI-1, 17, LII-2, 3, 4, 10, 14, LIV-6, LVII-7, 8, 12, 13, 24, 32, 40.

7) In the excavation report, classification of pottery unearthed from Tell Thalathat No.5 is based on following stratigraphical order: Layer 1: stratum between surface and level I, i.e. surface soil; Layer 2: stratum between levels I and II; Layer 3: stratum between levels II and III [Fukai *et al.* 1974: 4].

8) There is a possiblity that the pottery from the surface soil of Grids B-III, C-III and D-III were derived from these kilns.

9) As the R24 at Grids E-III and F-III was located on the slope of the Tell (Fig. 1), The layers from the surface to the foundation of the granary (the level IV) was relatively thin. The pottery derived from the level IV may be mixed up with those from the upper layers.

10) The relation between the types of pottery and levels of Tell Thalathat No.5 will be discussed in my article in *al-Rāfidān*.

11) In the previous report, the present author mentioned that a ribbed carinated bowl with a keen carination on the body was not found in Tell Thalathat No.5 [Numoto 1989:22].

12) Fukai *et al.* 1974: Pls. XLVII-9, 13, XLVIII-8, XLIX-8, 9, 12, 24, L-2, 3, 4, LI-3, 2, 10, LVII-1, 5, 6, 7, 16, 17, 22, 23, 39.

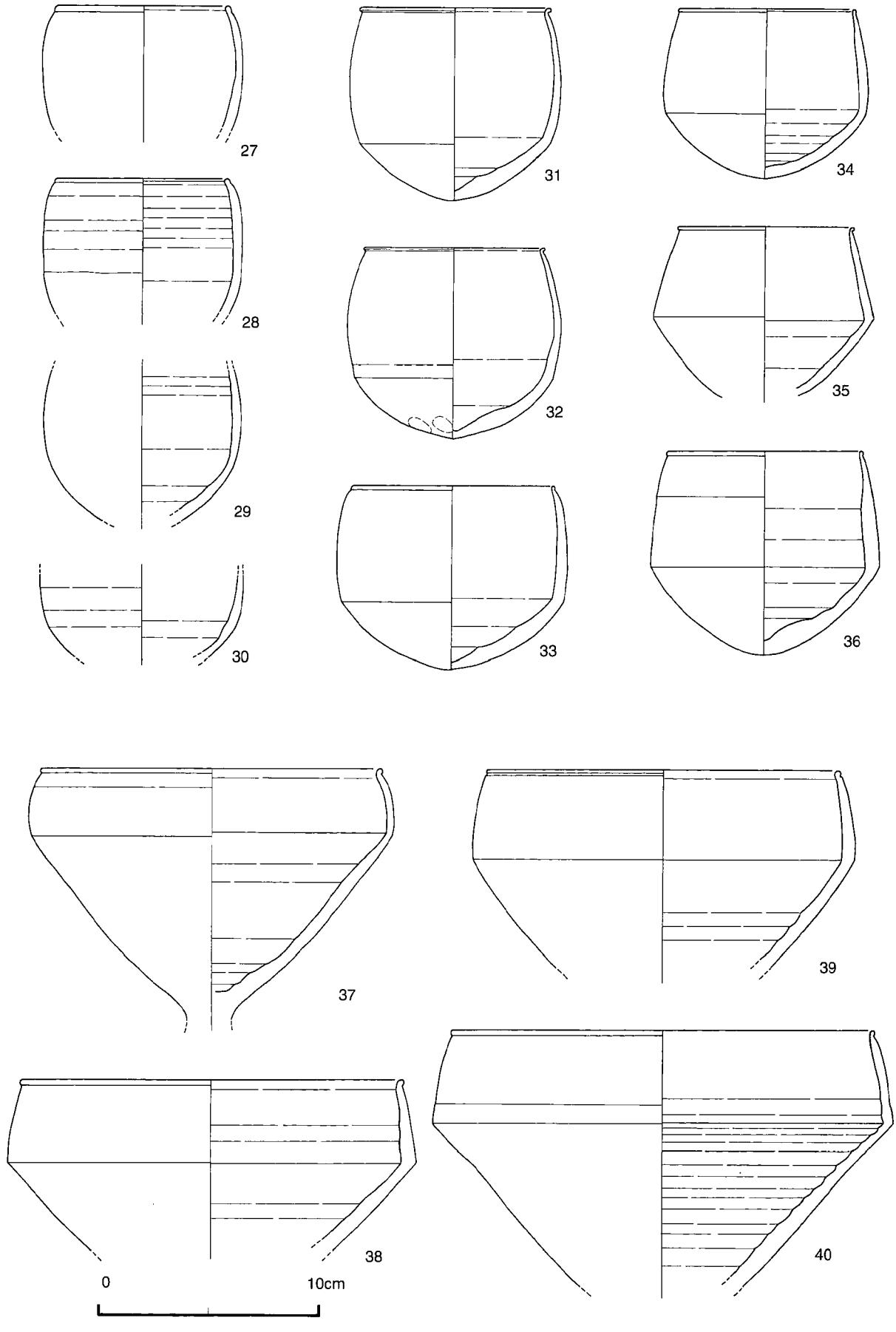

Fig. 4 Ninevite 5 Fine Wares from Tell Thalathat No.5.

which constitute a part of a vessel, are reported as independent pieces belonging to different vessels[13]. Besides, pottery which did not belong to the Ninevite 5 period, such as the pottery of earlier half second millennium B.C., and Ubaid or Uruk Pottery, are illustrated as Ninevite 5 pottery[14]. The detailes of the result of this examinations will be discussed in my next issue in *al-Rāfidān*.

4) Although only one painted carinated bowl is illustrated in the excavation report [Fukai *et al.* 1974: Pl.XLVII-1], there are photographs of five different painted carinated bowls in the report[15]. Other twelve sherds of painted carinated bowls are found among the unpublished materials (Fig. 6, 61–64)). Some painted wares which might belong to the "Transitional period" were found among the unpublished materials. The present author suggested that two sherds of painted footed bowls illustrated in the excavation report might belong to the Transitional Period [Fukai *et al.* 1974: Pls.XXX-1–2, XLVIII-7], when the features of their shapes and painted patterns were taken into consideration [Numoto 1991: 100, 102, 129]. The features of the fabrics and shapes of these specimens are completly different from other painted footed bowls from Tell Thalathat No.5. These facts tell us that these bowls belong to the period earlier than the "Painted and Early Incised Period", i.e. the "Intermediate or Transitional periods".

5) It is not unusual that many pottery belonged to other than the Ninevite 5 period are found among the unpublished materials. For example, carinated bowls, beveled rim bowls, and spouted jars, which belong to Late Uruk period. Early Uruk, Ubaid, or Halaf pottery are similar to those from the Tell Thalathat No.2 [Egami 1958; Fukai *et al.* 1970].

6) There are many specimens of potsherds which section have worn-out artificially[16]. These potsherds are found largely from the R3/O3 and the areas where pottery kilns existed[17], while there are few from the granary. They were probably used as scrapers or pallets in making pottery. The discovery of such a large number of potsherds suggests that the southern area outside the granary might have been a site of pottery production rather than a residential area.

Changes of pottery in the stratigraphical context

The author examined the characteristics of painted and fine wares and classified them in their relation to each area, the stratum and structure where they found. It is possible to show the chronological changes of pottery in terms of their style and composition[18]. My discussion focuses on the comparison between pottery from the level IV, which is the earlist occupation level and those derived from the levels I and II at the Grids B-III, C-III and D-III, which are the latest occupation levels in Tell Thalathat No.5[19].

The pottery from the Level IV, which located at the area of R2 and R4 (Grids D-II) contains a large number of painted ware and a small number of incised and notched band wares in comparison to the

13) Fukai *et al.* 1974: Pl.XXIX-1–2=Pl.L-4, Pl.XXIX-1–8, 13=Pl.LI-2, Pl.XXIX-1–24=Pl.XXIX-1–25, Pl.XXIX-2–11=Pl.XXIX-2–12, Pl.XXIX-2–19=Pl.XXIX-2–20, Pl.XXX-1–9, 10=Pl.XXXI-3–1, Pl.XXX-1–13=Pl.L-2, Pl.XXX-1–17, 19, 21=Pl.XLVIII-19, Pl.XXX-2–8=Pl.L-3, Pl.XXXI-1–2=Pl.XLVIII-8, Pl.LVII-12=XLIX-7, Pl.LVII-17+18+19, Pl.LVII-24=Pl.XLIX-10, Pl.LVII-33=Pl.XLIX-9, Pl.LVII-8=Pl.XLVII-9.

14) Fukai *et al.* 1974: Pls.XLVII-17, XLIX-13, 32, 33, XLIX-30, LII-18, XXXIII-6. 10, XXXII-2–1, 4, XXX-2–17.

15) Fukai *et al.* 1974: Pls.XXVI-2, XXIX-1–22, XXIX-2–11, 12, XXIX-2–15, XXX-2–6.

16) About 50 sherds of fine ware, about 15 sherds of painted ware [Fukai *et al.* 1974: Pls.XXVI-2, XXIX-1–10, 16, XXX-2–15] and about 50 sherds of middle and large ware.

17) They are the Grids C-III, B-III, D-III, C-II, and the level IV at the R2.

18) The specimens illustrated in the excavation report are also examined in this analysis.

19) There is a great possibility that the pottery from the surface and below the surface level of the Grids B-III, C-III, D-III, E-III and A-III belong to the Kilns 1 to 3 and O2. The stratigraphical context in the excavations proved that these kilns were constructed in the latest period of Tell Thalathat No.5 [Fukai *et al.* 1974: 7]. Moreover, considering the structure of the firing chambers of the kilns 1 and 2, the depth should be more than 70cm, whereas the depth was only about 20–40cm when they were excavated. It is, therefore, assumed that the cutting face of the chambers existed near the surface. The occupation floors acompanying these kilns had spread over the surface level [Ibid Pl.XLV] (Fig. 1). The floor of firing chamber at O2 is also located about 40cm under surface level [Ibid] (Fig.1). Consequently, most of the pottery from the surface soil of the Grids B-III,C-III,D-III,E-III and A-III should be derived from those kilns.

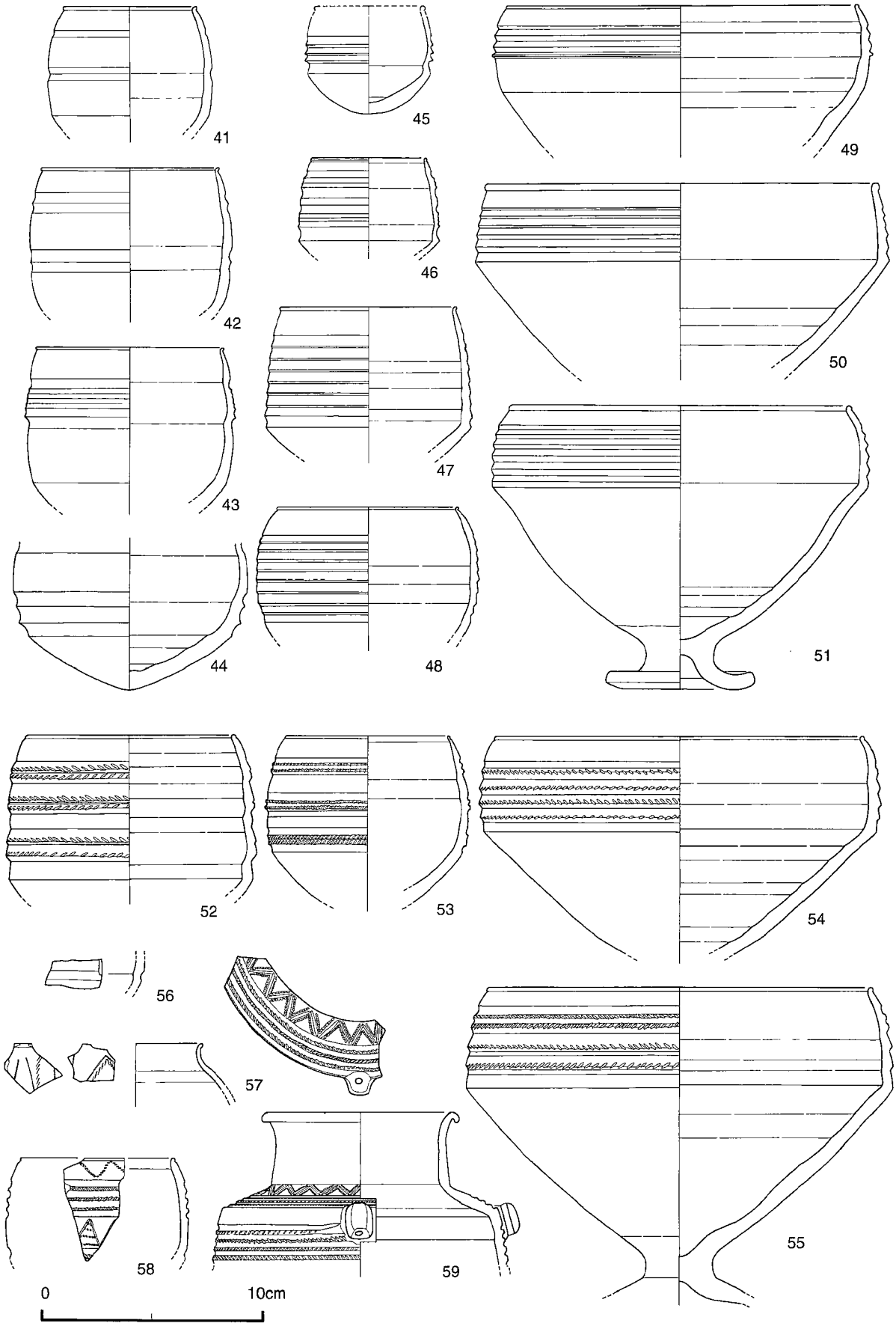

Fig. 5 Ribbed/Layered and Incised Ninevite 5 Wares from Tell Thalathat No.5.

Levels I and II (layers 1 and 2) at the Grids B-III, C-III and D-III (Table 1). The remarkable features of the pottery from the Level IV are: 1) Larger number of carinated and footed bowls which have keen carinations on thier bodies were found in comparison with those from upper levels. 2) Specimens of painted footed bowls with narrow upper part of bodies were recognized. Their features seem to be closely related to those of the "Intermediate Period" [Numoto 1994].

As for fine wares from the Levels I and II at Grids B-III, C-III, D-III, E-III and A-III, many plain, ribbed/layered, and horizontal grooved bowls without carinations or with gentle carination on their bodies were found. While no such specimens were excavated from the Level IV at the R2, 4, outside the R10 and 17, and insides the R3 and O3 [Ibid Pl.XLIX-10] (Figs. 4, 2 7–32, 5–41, 42, 43, 48, 49)[20]. The most remarkable specimen of fine ware is a small sherd of a excised ware(vertical grooved type), which was excavated on the lower level of the surface soil (layer 2) at Grid D-III (Fig. 5–56)[21]. Another remarkable specimen is a rim of a small jar having incised triangls with dotty columns (Fig. 5–57). Both the shape and the style of incision are common in the "Early Excised Period" [Numoto 1993]. Since this specimen was found with a large jar buried in the trench at Grid C-III, perhaps this belonged to an upper layer of the Level II.

The features of these fine wares are very similar to those in the "Early Excised period" [Numoto 1993: 74–79], and are different from those from the Level IV. These fine wares are similar to those from the Levels 8 and 7 at Tell Thuwaij, and the period IIIc at Tell Leilan [Numoto in press; Schwarz 1988 Figs. 32, 33][22].

At the level I and II at the Grids B-III, C-III, D-III, painted wares occupy only a small share, while a larger number of incised and notched band wares are found in their comparison to the Level IV at R2 and 4 (Table. 1). This feature is similar to the transition of pottery during the phases K to G of Tell Mohammed Arab Period 2 [Roaf and Killick 1987: 212, 213].

Thus, changes in the shares of decorated wares and shapes of fine wares found on the upper (levels I and II) and lower levels (level IV) clearly show temporal difference.

Similarly, the change of painted wares in their style is found between those from the upper and the lower levels. Two specimens of painted wares can be chosen as typical examples. One is a painted jar with vertical belts from the shoulder to the lower part of the body [Fukai *et al.* 1974: Pl.L-1]. Most pieces of this painted jar were excavated from the north corner of the Kiln 1[23]. Since Kiln 1 is believed to have belonged to the latest stage of Tell Thalathat No.5[24], this painted jar might date to the

20) The total number of these types of specimens is 78, 52 of them were found from these areas.

21) This is the only specimen of this type excavated from Tell Thalathat No.5. Whereas there is still a possibility that this material was derived from surface layer, some excised sherds were found in collection of the surface in this tell.

22) These features support my assumption that bowls without carination appeared in the later period of the "Painted and Early Incised Period" (Mohammed Arab Period 2) and are getting popular after the Mohammed Arab Period 2. While Rova insists that such bowls are common in the Mohammed Arab Period 2 [1993: 65]. The present author considered that no painted ware were produced at the time when early excised ware appeared ("Early Excised Period") [Numoto 1993]. However, it becomes apparent through this study that the excised and incised sherds both of which show the typical features of pottery in the "Early Excised period", existed at the same period. It is, therefore, necessary to re-examine the period when the early excised ware (grooved ware).

23) The findspot of this painted jar is the "D-III/north of Kiln 1", according to the excavation report [Fukai *et al.* 1974: xv]. Since this painted jar had been over-fired, the shape of the rim and pedestal was distorted and a part of the surface was burnt. It is likely that this jar had fired in the Kiln 1, but was abondoned because of the defect.

24) Whether or not the Kilns 1 to 3 were costructed after the collaption of the granary, or whether or not they had co-existed side with the granary is not mentioned in the excavation report. There is a clue to solve this question. A part of the granary belongs to the Grid E-III, located next to the Grid D-III in which the Kilns 1 to 3 exist. A large number of fine wares excavated from the surface soil of the Grid E-III. The amount is larger than those from the Grids D-II,E-II, and F-III over which the granary spread (Total amount of the fine wares from surface soil in each grid: E-III: 47 sherds, 776.5g; D-II: 49 sherds, 476.7g; E-II: 20 sherds, 171.6g; F-III: 16 sherds, 375.8g). This fact suggests that most of the fine wares found on the surface soil of the Grid E-III were derived from the Kilns 1 to 3, and they were scattered on the site of the granary. The granary had already collapsed at the time when these kilns were used. However, there is almost no chronological difference between the periods to which the granary and Kilns 1 to 3. It was also found that the Kiln 3 used to have the same structure as the kilns O2 and O3.

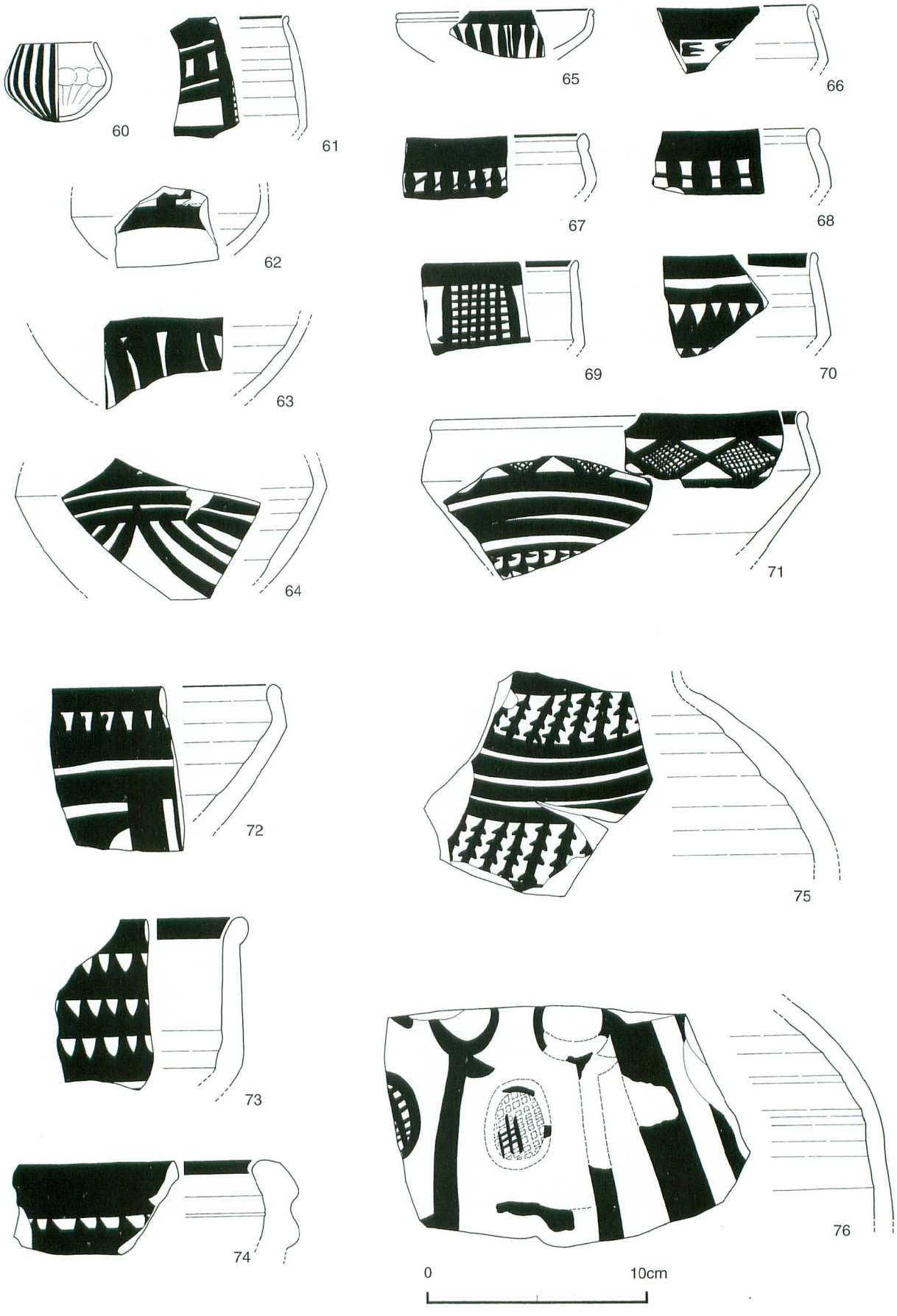

Fig. 6 Painted Ninevite 5 Wares from Tell Thalathat No.5.

same period as the Kiln 1. Moreover, the simplified design of the paint is probably the characteristic of the painted pottery at the final stage of the Ninevite 5 period [Numoto 1992]. Another example is a fragment of a painted jar with ribbed incision, which supposedly used to have a row of abstract animal motifs on its shoulder [Fukai *et al.* 1974: Pl.XXXI-2–6]. This was found from the surface soil of the Grid B-III. If this painted jar belongs to the same period as O2 in this Grid [Ibid Pl.XLIV], it is new design found in Tell Thalathat No.5.

The excavation report does not identify what the kiln O3 produced. However, many fine wares excavated from the O3 are well-presurved and some of them are over-fired. Furthermore, twelve potsherds which might have used as potter's tools were found [Fukai *et al.* 1974: Pl.XXVI-2]. Judging from these facts, the O3 should be used as pottery kiln. Since the excavators failed to grasp the stratigraphical relation between the kiln of O3/R3 and the strata in other structures, they could not identify the period to which the O3/R3 belonged. However, they suggest that the O3/R3 possibly belong to the later period than that of the Level II [Ibid 17]. Looking at the decorated pottery from the O3/R3, they insist that the number of incised ware is relatively higher than that of the Level IV and, therefore, the O3/R3 was possibly used later than the period of the Level IV. This statistical method is not applicable here, because the O3/R3 was pottery kiln. The shape and the type of fine and painted wares from the O3/R3 are not greatly different from those of level IV. From this point of view, it is likely that the R3 and the O3 were constructed at the same period as the granary.

Since a large number of pottery were found in both the R3 and O3, it is possible to examine the characteristics of these pottery assemblage and the pottery production system in this specified short period of the Ninevite 5 "Painted and Early Incised Period".

Table 1 Sherd count of the decorated Ninevite 5 pottery from each findspot in Tell Thalathat No.5.

Level IV of the R2 and R4

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	1 (1.4%)	2 (2.7%)	20 (27.0%)	51 (68.9%)	74

1 of the incised sherds includes notched band patterns.

Levels I and II (layers 1 and 2) of D-III

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
1 (2.0%)	6 (12.2%)	7 (14.3%)	10 (20.4%)	25 (51.0%)	49

2 of the incised sherds include notched band patterns.

Level I (layer 1) of B,C-III and upper layer of R3 (layer 2)

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	8 (10.0%)	8 (10.0%)	21 (26.3%)	43 (53.8%)	80

6 of the incised sherds include notched band patterns.

Inside the O3 and the R3 (the lower level)

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	5 (7.8%)	12 (23.4%)	10 (15.6%)	37 (61.7%)	64

3 of the incised sherds include notched band patterns.

Conclusion

Roaf and Killick compared the ratio of decorated pottery among the Ninevite 5 specimens between Tell Thalathat and Tell Mohammed Arab Period 2 (Tables 2, 4) [1987: 217]. They conclude that Ninevite 5 specimens from Tell Thalathat belong to a slightly later period than those from Tell Mohammed Arab Period 2. One of the reasons for their proposal is that the proportion of incised ware in Tell Thalathat is relatively higher than that of Tell Mohammed Arab Period 2.

Table 2 Frequency of decorated wares according to counts of published sherds from Tell Thalathat No.5 [Roaf and Killick 1987: 217, Fig. 8a].

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	45 (21.1%)	12 (5.6%)	8 (3.8%)	148 (69.5%)	213
21 of the incised sherds include notched band patterns.					

Since the unpublished materials from Tell Thalathat contain the large number of painted, notched band, and ribbed/layered wares, the present author re-examined the proportion occupied by each type of these ware. It is now apparent that these rate are different from those of the published material as shown in Table. 3. Therefore, the statistical analysis conducted by Roaf and Killick has little value. The proportion of each decorated ware in the author's statistical analysis is similar to that of the phases G and H at Tell Mohammed Arab Period 2 (Table 4) [Ibid 212], even though one "grooved excised" sherd is included in the specimens of Tell Thalathat. It might not be possible to tell that these specimens of Tell Thalathat belong to the later period than Tell Mohammed Arab Period 2. The decorated pottery assemblage from the granary and level IV on the northern side of the granary is very similar to those of the phases G and H at Tell Mohammed Arab Period 2 (Table. 5). In particular, the analysis of the decorated pottery assemblage from the level IV at the R2 and R4 proves the period of the granary being established (Table 1), which is the same as Tell Mohammed Arab Period 2 (Phases G and H).

Roaf and Killick compare the characteristic of pottery from Tell Thalathat and Tell Mohammed Arab Period 2, and suggest that Tell Thalathat belong to the later period than Mohammed Arab Period 2 [1987: 217; Killick in press]: 1) the specimens from Tell Thalathat contain many painted footed bowls

Table 3 Whole sherd count of the decorated Ninevite 5 pottery from Tell Thalathat No.5.

Excised	Incised	Notched band	Ribbed or layered	Painted	Total
1 (0.1%)	59 (6.9 %)	84 (9.8 %)	212 (24.7%)	501 (58.5%)	857
34 of the incised sherds include notched band patterns. 9 of Ri/La. sherds include horizotal grooved patterns.					

Table 4 Sherd count of the decorated Ninevite 5 pottery from Tell Mohammed Arab Period 2 (phases G and H) [Roaf and Killick 1987: 212].

	Excised	Incised	Notched band	Ribbed or layered	Painted	Total
Phase G	0	5 (14.3%)	1 (2.9%)	7 (20.0%)	22 (62.3%)	35
Phase H	0	7 (5.0%)	12 (8.6%)	33 (21.6%)	87 (62.6%)	139
4 of the incised sherds include notched band patterns.						

Table 5 Sherd count of the decorated Ninevite 5 pottery from the granary and the Level IV of the northern side of the granary at Tell Thalathat No.5.

Granary[25]					
Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	3 (4.9%)	6 (9.8%)	15 (24.6%)	37 (60.7%)	80
1 of the incised sherds includes notched band patterns.					
Level IV of northern side of the granary (R14 and R24)					
Excised	Incised	Notched band	Ribbed or layered	Painted	Total
0	4 (8.4%)	5 (10.4%)	9 (18.8%)	30 (62.5%)	48
3 of the incised sherds include notched band patterns.					

which have longer feet; 2) many incised motifs of the specimens from Tell Thalathat are composed of two or three design elements; 3) a new type of incised lugged jars are recognized among the specimens from Tell Thalathat. As the result of the author's examinations of the unpublished materials from Tell Thalathat, the following points become clear. First of all, although many specimens of middle to large-sized footed bowls with longer feet are illustrated in the excavation report, a lot of specimens with lower feet exist. Secondly, while large numbers of incised ware were found in Tell Thalathat, the total number of incised ware excavated from Tell Mohammed Arab Period 2 are only twelve or fourteen. The comparison between the incised wares from these two sites is not useful, because the quantity of the samples from these two sites is different. Thirdly, the place where the two incised lugged-jars were found from the lower surface stratum (the layer 2) at the Grid C-II which belongs to the later period in the stratigraphy of Tell Thalathat No.5. Considering these points, in order to set up the chronological order between Tells Thalathat and Mohammed Arab Period 2, not only should the published materials of Tell Thalathat, but also the unpublished ones be examined.

The occupation levels belonging to the granary are classified into three (the Levels, II, III and IV) by the excavators. This granary had been constracted at the time of the level IV and had been used until the time of the level II, as shown in illustration of the section in the excavation report (Fig. 2) [Fukai *et al.*1974: Pl.XLII]. It seems that there is no chronological gap between these[26]. There is also no remarkable change of the style between the pottery from these levels. Therefore, these levels were regarded as those having been at the same period [Roaf and Killick 1987: 216].

However, my present study suggests that the Ninevite 5 Period of Tell Thalathat No.5 can roughly be devided into two stages. The pottery assemblage from upper levels above the Level II (especialy, the Layers 1 and 2 at the Grids B, C, D, E-III) show characteristics which are similar to the "Early Excised" style. This pottery assemblage is likely to belong to a period slightly later than Tell Mohammed Arab Period 2, i.e. the period between Tell Mohammed Arab Period 2 and the "Early Excised Period"[27]. Moreover, the characteristics of the pottery assemblage from the Level IV, at the time when the granary was constructed, are similar to those of Tell Mohammed Arab Period 2. Only the exceptions are the specimens with old style [Killick in press Fig. 6–7–9]. It is, therefore, supposed that the Ninevite 5 period of Tell Thalathat No.5 corresponds to the period of the Phases G and H of Tell Mohammed Arab Period 2 and Phases E to K of Tell Thuwaij Trench C [Numoto 1996: 98, 99].

The study of the unpublished materials from Tell Thalathat No.5 apparently contributes to setting

25) As the specimens include the filling of the granary, some specimens are possibly derived from the upper layer.

26) Judging from the illustration of the section, the levels II and III belong to the same occupation level.

27) The characteristics of incised ware are similar to those from the Phases A and B at Tell Thuwaij Trench C [Numoto 1996 Fig. 8–47–50].

up a chronological order in the Ninevite 5 "Painted and Early Incised Period".

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Bibliography

Egami, N.
1958 *Telul eth Thalathat Vol.I, The Excavation of Tell II*, Tokyo: Tokyo University press.

Fujii, H., Yoshikawa, M., Oguchi, H., Oguchi, K. and Numoto H.
1989–90 Preliminary Report on the Excavations at Tell Thuwaij, Tell Jessary (Second Season), and Qasr Banat, *Sumer* 46, pp.38–59.

Fukai, S., Horiuchi, K. and Matsutani, T.
1970 *Telul eth Thalathat Vol.II, The Excavation of Tell II*, Tokyo: Tokyo University press.
1974 *Telul eth Thalathat Vol.III, The Excavation of Tell V*, Tokyo: Tokyo University press.

Killick, R. G.
in press The Relative Chronology of Ninevite 5 Pottery from Tell Mohammed Arab, Paper delivered at the Conference on *The Origins of North Mesopotamian Civilization: Ninevite 5 Chronology, Economy, Society*, December 15–19, 1988, Yale University.

Numoto, H.
1988 Excavations at Tell Fisna, *al-Rāfidān*, Vol.IX, pp.1–72.
1989 Changes of the Ninevite 5 Carinated bowl, *al-Rāfidān*, Vol. X, pp.13–26.
1991 Painted Designs of the Ninevite 5 Pottery, *al-Rāfidān*, Vol.XII, pp.85–155.
1992 Painted Designs of the Ninevite 5 Pottery – Part 2 –, *al-Rāfidān*, Vol.XIII, pp.105–13 7.
1993 Incised and Excised Designs of the Ninevite 5 Pottery, *al-Rāfidān*, Vol.XIV, pp.69–108.
1994 Examinations of the Presence of the Ninevite 5 "Intermediate Period", *al-Rāfidān*, Vol.XV, pp.51–57.
1996 Excavations at Tell Thuwaij Trench C, *al-Rāfidān*, Vol.XVII, pp.72–102.
in press Ninevite 5 Pottery from Tells Fisna and Thuwaij and Chronological Problems in Eski-Mosul, Iraq, Paper delivered at the Conference on *The Origins of North Mesopotamian Civilization: Ninevite 5 Chronology, Economy, Society*. December 15–19, 1988, Yale University.

Roaf, M. and Killick, D.
1987 A Mysterious Affair of Styles: The Ninevite 5 Pottery of Northern Mesopotamia, *Iraq* 49, pp.199–230.

Rova, E.
1993 Pottery, Tell Karrana 3, *Baghdader Forschungen* 15, pp.37–136.

Schwartz, G.M.
1988 *A Ceramic Chronology from Tell Leilan Operation 1: Yale Tell Leilan Research: Vol.1.*, Weiss, H., ed., Yale University Press.

Explanation of pottery in Figures 3 to 6

* Pottery colors were recorded according to *Munsell Color System: Standard Color Book Deluxe.*

<in Fig.3>

1. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of Jar; pale orange outer surface (7.5YR8.5–8/4); dull orange inner surface (5YR8–7.5/6); buff core (2.5Y7.5/1); middle amount of vegetable (5mm) and sparse fine sand temper; Rim diam.: about 32cm.
2. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of Jar; creamy buff (2.5Y9/2) and reddish buff (5YR8/4) outer surface of rim; buff lower part of outer surface (10YR9/2); light buff inner surface (9.5YR7.5/6); very dark grey core (N3/); much vegetable (5mm) and fine sand temper; Rim diam.: about 35cm.
3. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Pedestal of painted large bowl; greenish surfaces and core (10Y9/1–

2); light reddish brown paint (5YR6–5.5/4); much vegetable (5–8mm) and fine sand temper; trace of bitumen sticking is found on inner surface and lower part of outer surface; Diam.: about 25–30cm.

4. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of incised jar; greenish surfaces and core (10Y9/1–2); large amount of vegetable (5mm) temper; containing chalky particles; combing incision is arranged on shoulder.
5. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of large jar; greenish surfaces and core (5GY8.5/2–3); much vegetable, very fine sand and sparse chalky particles temper; over-fired part of rim; partially defaced lip; a horizontal grooved line on the neck.
6. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Neck of jar; reddish buff surfaces (2.5YR7/6–7); buff (10YR8.5/2) and grey (N6.5/) core; much vegetable (2–10mm) temper.
7. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Neck of jar; creamy (slip) outer surface (2.5Y9/2); buff inner surface (10YR8.5/3); pinkish buff core (5YR8.5/2–3); fine sand, chalky particles and a little vegetable (3–5mm) temper.
8. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of bowl; greenish surfaces and core (5Y9–8.5/2); large amount of vegetable and sparse chalky particles temper.
9. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of coarse open bowl; reddish brown outer surface of rim (5YR2/2); blackish brown lower part of outer surface (2.5YR5/8); very dark grey/reddish brown inner surface and core (N3/ and 10R5/8); much coarse sand and chalky sand temper; burnished on surfaces; exfoliated outer surface; soft.
10. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of coarse jar; dark brown outer surface (5YR6–5.5/3); very dark grey inner surface and core (N3.5–3/); much coarse sand temper; burnished on outer surface; slightly soft.
11. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Base of jar or bowl; greenish surfaces and core (7.5Y9–8.5/1); fine sand and much vegetable (2–5mm) temper.
12. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Body of painted jar; reddish buff inner surface and core (2.5YR6.5/6); orange paint (2.5YR6/8–9); much fine sand temper; containing chalky particles and mica; scraped on inner surface; Uruk sherd.
13. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Ring-base of bowl; greenish surfaces and core (2.5GY9–8.5/1); middle amount of vegetable (2–8mm), fine sand and sparse chalky sand temper; ring-base is hand-made, thereby lacking uniformity.
14. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Body of coarse jar; cream (7.5YR8.5/3) and dull orange (2.5YR7/6–7) outer surface; light buff inner surface (7.5YR8/5); dark gray core (N4–3.5/); large amount of vegetable temper; containing corse sand and small stone; soft and fragile; Hassuna coarse carinated jar.
15. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of painted bowl; light buff surfaces (5YR8/5–6); pinkish buff core (2.5YR7.5/6); light reddish brown paint (10R6.5/6); sparse very fine sand temper; fine fabric; burnished on surfaces; defaced outer surface; Halaf ware.
16. Lower stratum of the granary at R2 (below the level IV): 1966/1/18; Rim of incised jar; greenish white surfaces (7.5Y9/1); buff core (7.5YR8/4); large amount of vegetable (5mm) temper; combing incision is arranged on shoulder; Rim diam.: about 8–9cm; 1/10 extant.
17. Lower stratum of the granary at R2 (below the level IV): 1966/1/18; Rim of large jar; greenish white surfaces (7.5Y9–8.5/1); pinckish white core (7.5YR8.5/3); much vegetable (5–7mm) and fine sand temper; containing chalky corse sand; Rim diam.: more than 35cm.
18. Lower stratum of the granary at R2 (below the level IV): 1966/1/18; Rim of coarse jar; brown outer surface (2.5YR6.5–6/8); dark brown inner surface (5YR6/2–3); dark grey core (N6/); much coarse sand and fine sand temper; burnished on surfaces; hard; identical to specimen Pl.LII-11 in the excavations report [Fukai et al. 1974].
19. Lower stratum of the granary at R2 (below the level IV): 1966/1/18; Rim of painted bowl; greenish surfaces and core (2.5GY9–8.5/2); dark green paint inner surface (2.5Y4.5–4/3); much vegetable (2–7mm) and sparse fine sand temper; Rim diam.: about 25–28cm; 1/8 extant.
20. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; identical to specimen Pl.XXX-2–1 in the excavations report [Ibid]; Rim of painted footed bowl; panel pattern with plant motif; greenish cream surfaces and core (5Y9/1–2); dark reddish brown paint (2.5YR3/2); sparse fine sand and vegetable (1–2mm) temper; relatively fine fabric; Rim diam.: about 30cm; 1/6 extant.
21. Lower stratum of the granary at R2 (below the level IV): 1966/1/9: Lower body of painted jar; concentric arcs; cream outer surface (slip) (2.5Y9/2); pinkish buff inner surface (7.5YR7.5/3); pinkish beige core (2.5YR8/4); very dark reddish brown paint (5R3/2); a little fine sand, chalky coarse sand and middle amount of vegetable (1–4mm) temper; scraped on inner surface.
22. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Body of fine ribbed or layered carinated bowl; greenish outer surface (7.5Y8/3); greenish grey inner surface (5GY6.5/2); light greenish grey core (10GY7/1; 5GY6.5/2); a little fine sand and vegetable (1–3mm) temper; containing chalky particles; very hard; exfoliated outer surface.
23. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Body of fine ribbed or layered carinated bowl; greenish upper part of outer surface (7.5Y9/2–3); greenish grey inner surface, lower part of outer surface and core (10Y8.5/1); sparse fine sand and vegetable (1–3mm) temper; burnished on lower part of outer surface after scraping.
24. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Lower body of fine carinated bowl; light grey surfaces and core (N8–7.5/); sparse fine sand temper; burnished on outer surface; very smooth outer surface; thin wall.
25. Lower stratum of the granary at R2 (below the level IV)(1966/1/9) and level IVb at R2 (1966/1/6): Rim of fine footed bowl; greenish outer surface (rim to upper part of lower body) (10Y7.5/3); deep greenish inner surface, outer surface of lower part of lower body and core (2.5GY7.5/1–2); a little chalky fine and coarse sand (1–2mm), and sparse vegetable (1–3mm) temper; burnished on lower part of outer surface; hard; Rim diam.: about 20cm.
26. Lower stratum of the granary at R2 (below the level IV): 1966/1/9; Rim of bowl; creamy (slip) outer surface (5Y9/2); buff inner surface (10YR8.5–8/3); light buff core (5YR8/3–4); large amount of vegetable and chalky sand temper; defaced surfaces.

<in Fig.4>

27. F-III/1: Rim of fine bowl; light bluish grey surfaces and core (5PB8.5/1); a little vegetable (1–3mm) temper; clay with large amount of vegetable lined on lower part of body; Rim diam.: about 8cm; 1/12 extant.
28. E-III/2 (outside granary): Rim of fine bowl; dark buff outer surface (10YR7/3); greyish buff inner surface (2.5Y7/2); grey and greyish buff core (N5.5/,2.5Y7/2); fine fabric; burnished or wet-smoothed on lower part of outer surface after scraping; Rim diam.: about 7.8cm; 1/4 extant.

29. E-III/1: Body of fine bowl; greenish grey upper part of outer surface (5GY8.5/1); light bluish grey inner surface and lower part of outer surface and core (2.5PB8/1); a little fine sand and middle amount of very fine sand temper; wet-smoothed on lower part of outer surface after scraping; Max. diam.: about 9cm; 1/4 extant.
30. C-III/1: Body of fine bowl; creamy surfaces and core (5Y8.5/2); a little fine sand and vegetable (1–3mm) temper; clay with large amount of vegetable lined on lower part of body; wet-smoothed on lower part of outer surface after scraping; Max. diam.: about 9.2cm; 1/4 extant.
31. Lower level of D-III/1 and E-III/1: Fine carinated bowl; buff inner surface (2.5Y7.5/2); buff outer surface (rim to upper part of lower body) (10YR8.5–8/3); greenish buff outer surface of bottom and core (2.5Y8.5/2); a little vegetable temper; clay with large amount of vegetable lined on bottom; wet-smoothed on lower part of outer surface after scraping; slightly soft; Rim diam.: 8.5cm; Height: 8.5cm; incomplete; rim is almost missing.
32. E-III/1: Fine carinated bowl; greenish grey inner surface, lower part of outer surface and core (7.5GY8/1); greenish grey upper part of outer surface (5GY8.5/1); a little vegetable (2mm) temper; clay with large amount of vegetable lined on bottom; wet-smoothed on lower part of outer surface after scraping; traces of finger impressions and pricks remain on outer surface of bottom; Rim diam.: 8.2cm; Height: 8.5cm; incomplete; upper part is almost missing.
33. O3: Fine carinated bowl; greenish outer surface (rim to upper part of lower body) (2.5GY8/2); greenish grey outer surface of bottom and core (2.5GY8.5–8/1); light grey inner surface (N8.5/); a little vegetable (2mm) and fine sand temper; containing chalky particles; clay with large amount of vegetable lined on bottom; wet-smoothed on lower part of outer surface after scraping; Rim diam.: 9.2cm; Height: 8.1cm; 1/2 extant.
34. R5, R2a and D-II/1: Fine carinated bowl; greenish grey outer surface (5GY8.5/1); greenish grey inner surface and core (5GY8/1); sparse vegetable temper; fine fabric; burnished on lower part of outer surface after scraping; Rim diam.: 8cm; Height: 7.5cm. 1/4 extant.
35. D,E-II/1: Fine carinated bowl; greenish outer surface (rim to upper part of lower body) (2.5GY7.5/3); deep greenish outer surface of bottom (2.5GY7/2); yellowish green inner surface (natural slip) (2.5GY8–7.5/3); greenish grey core (5GY6.5/1); a little fine sand and chalky coarse sand temper; burnished on outer surface of lower body; well-fired and very hard; Rim diam.: about 8cm; 1/4 extant.
36. Level IV-b at outside of R10: Fine carinated bowl; creamy outer surface (rim to upper part of lower body) (7.5Y9/1); pinckish beige inner surface, outer surface of bottom and core (2.5YR8.5/2); much very fine sand and a little vegetable (1–3mm) temper; grity inner surface; clay with large amount of vegetable lined on bottom; wet-smoothed on lower part of outer surface after scraping; lip is partially over-fired; incomplete; rim is almost missing; Rim diam.: 8.8cm; Height: 9cm.
37. Level IV-b at R2; Fine footed bowl; light buff outer surface (rim to upper part of lower body) (5Y9/2–3); greenish cream and light buff outer surface of lower body (reserved slip-like natural slip) (5Y9/2–3, 7.5YR8/6); greenish inner surface and core (10Y8.5–8/2); a little vegetable (2–4mm) temper; fine fabric; fabric of stem contains much vegetable; wet-smoothed on lower part of outer surface (using the wheel-turn) after scraping; Rim diam.: about 15.5cm.
38. Level IV-b at R4: Fine footed bowl; greenish cream surfaces and core (5Y8.5–8/2); buff core of rim (2.5Y8.5/4); much very fine sand and a little vegetable (2mm) temper; slightly soft; wet-smoothed on lower part of outer surface after scraping (horizontal way); Rim diam.: 17.2cm; 1/6 extant.
39. O3: Fine footed bowl; creamy white surfaces and core (5Y9–8.5/1); sparse vegetable (1–2mm) temper; fine fabric; burnised on outer surface of lower body after scraping (3mm in width); Rim diam.: 16cm; 1/2 extant.
40. O3: Plain footed bowl; greenish cream outer surface (rim to upper part of lower body) (natural slip) (5Y9/2); pinckish cream inner surface, outer surface of lower body and core (10YR8.5/1–2); middle amount of vegetable (2–5mm) temper; scraped on lower part of outer surface before being wet-smoothed on the lowest part; Rim diam.: about 20cm; 1/12 extant.

<in Fig.5>

41. E-III/1, E-III/2 (outside of granary): Horizontal grooved carinated bowl; light bluish grey outer surface and core (7.5PB8/1); light bluish grey inner surface (5PB8/1); sparse fine sand temper; fine fabric; clay with large amount of vegetable lined on lower part of body; wet-smoothed on lower part of outer surface after scraping; Rim diam.: about 6cm; four fragments.
42. E-III/1: Horizontal grooved carinated bowl; greenish grey surfaces (2.5GY8/1) and core (5Y7.5/1); a little fine sand, vegetable (2–3mm) and sparse coarse sand temper; containing chalky particles; Rim diam.: about 8cm; 1/6 extant.
43. Deposit of R23 (granary): Layered carinated bowl; greenish grey surfaces (2.5GY8/1); light bluish grey core (2.5PB8.5/1); a little fine sand, chalky coarse sand and sparse vegetable (2–4mm) temper; clay with large amount of vegetable lined on lower part of body; burnished on outer surface of lower body; Rim diam.: 8.5cm; 1/12 extant.
44. R24 at F-III: Horizontal grooved carinated bowl; greenish grey inner surface and outer surface of upper body (2.5GY7.5/2); dark greenish grey outer surface of bottom (10GY6.5/2) and core (10GY6/2, 2.5GY7/4); a little fine sand, coarse sand and vegetable (2–4mm) temper; roughly scraped on outer surface of bottom; Max. diam.: 10.5cm.
45. O3: Ribbed small carinated bowl; light bluish grey surfaces (5PB8.5–8/1) and core (5PB8–7.5/1); a little fine sand and vegetable (2mm) temper; roughly wet-smoothed on outer surface of bottom after scraping; Max. diam.: 5.8cm.
46. B-III/2 (southern outside of R3): Layered carinated bowl; light grey surfaces and core (N8/); sparse fine sand temper; fine fabric; wet-smoothed on lower part of outer surface; Rim diam.: 5.2cm; 1/6 extant.
47. C-III/1,C-II/1: Ribbed or layered carinated bowl; greenish outer surface (5Y8.5/1); greenish buff inner surface and core (2.5Y8.5/2); sparse fine vegetable (1–2mm) temper; relatively fine fabric; ribbs are formed by horizontal burnishing; scraped on lower part of outer surface; Rim diam.: about 8cm; 1/10 extant.
48. D-III/2: Ribbed bowl; light bluish grey surfaces and core (5PB7.5–8/1); a little fine sand and sparse vegetable temper; containing chalky particles; scraped on lower part of outer surface; Rim diam.: 8.2cm; 1/12 extant.
49. AB-III/1: Layered footed bowl; greenish grey upper part of outer surface (7.5GY9/1); greenish buff inner surface, lower part of outer surface and core (2.5Y9–8.5/3); a little fine sand and middle amount of vegetable temper; scraped on lower part of outer surface using the wheel-turn; Rim diam.: about 16cm; 1/12 extant.
50. C-II/2: Ribbed footed bowl; greenish inner surface, lower part of outer surface and core (10Y8.5/3); dull orange upper part of outer surface (7.5YR7/5); sparse vegetable (1–3mm), coarse sand and a little fine sand temper; burnished on lower part of body; slightly soft; defaced surface; Rim diam.: about 17–18cm; 1/6 extant.

51. R14 at E-II, level IV: Ribbed footed bowl; greenish grey surfaces (5GY9–8.5/1) (reserved slip-like natural slip) and core (7.5GY8.5/1); a little vegetable (1–3mm) and sparse fine sand temper; fabric of pedestal is tempered with large amount of vegetable (1–6mm); wet-smoothed lower part of outer surface after scraping; Rim diam.: 15.4cm; Height 12.4cm; incomplete.
52. Between R28 and granary (levels II to IV): Incised carinated bowl; ribbed with notched band pattern(feather like pattern); light bluish grey surfaces and core(5PB8.5/1); greenish partially core (2.5GY8/2); a little fine sand and very fine sand temper; burnished on outer surface of lower body; Rim diam.: about 9.5cm; 1/5 extant.
53. O3: Incised carinated bowl; notched band pattern (one way type); grey surfaces and core (N/6.5); sparse fine sand and vegetable (1–2mm) temper; fine fabric; burnished on outer surface of lower body after scraping; over-fired inner surface; defective products; Rim diam.: about 8.4cm; 1/4 extant.
54. R3b at B-III (the same as O2 level); Incised footed bowl; ribbed with notched band pattern; greenish grey outer surface (rim to upper part of lower body) (7.5Y8.5/1); light grey inner surface, outer surface of lower body and core (N9–8.5/); a little vegetable (1–3mm) and sparse fine sand temper; relatively fine fabric; burnished on outer surface of lower body; Rim diam.: 16.5cm; 1/7 extant.
55. Level IV-b at R2: Incised footed bowl; Incised footed bowl; ribbed with notched band pattern; greenish surfaces and core (10Y8–7.5/2); middle amount of vegetable (2–6mm) and a little fine sand and sparse coarse sand temper; containing chalky particles; inner surface of bottom and pedestal contain large amount of vegetable; roughly burnished on outer surface of lower body after scraping; defaced surface; Rim diam.: 17.3cm; 2/5 extant.
56. Lower level of D-III/1: Excised sherd; a vertical grooved line remains partially; greenish grey surfaces and core (2.5GY8/2); sparse fine sand temper; scraped on lower part of body; Max. diam.: about 8cm.
57. Trench of C-III: Rim of incised small jar; motif of triangles with dashes; very fine and shallow incision; greenish grey surfaces and core (2.5GY8–7.5/2); spare very fine sand and vegetable (1–2mm) temper; fine fabric; Rim diam.: about 6cm.
58. D-II/1: Incised carinated bowl; notched bands, dotted wavy line and triangle with dots motifs; greenish grey surfaces and core (2.5GY9–8.5/1); sparse fine sand temper; Rim diam.: about 7cm.
59. On the floor of outside of R15b (R14, Level IV): Incised lugged-jar; notched bands and motif of multiple dotted chevron lines; blackish brown outer surface (7.5YR6/1); brownish dark grey inner surface and core (10YR7/1); a little fine sand temper; fine fabric; burnished on outer surface of body after incising: vertical burnished traces (1–2mm in width) are clearly seen on the part of neck; distinctive and elaborate ware; one lug remains on the shoulder; Rim diam.: 8.8cm; Max. diam. 12.4cm; 1/4 extant.

<in Fig.6>

60. A,B-III/1: Miniture painted bowl; pale brown surfaces (2.5YR6.5/4) and light brown core (10R5/6); dark reddish brown paint (2.5YR3.5/2–3); each vertical line lack uniformity; sparse fine sand and vegetable (1–2mm) temper; fine fabric; hand made; Max. diam.: 4.8cm; 1/3 extant.
61. On the floor of R16b (granary): Rim of painted carinated bowl; panel pattern; pale beige outer surface (slip) (10YR8.5/2); pinkish beige inner surface and core (2.5YR7.5/3); dark reddish brown paint (7.5R3.5–3/2); a little very fine sand and sparse vegetable (1–2mm) temper; relatively fine fabric; slightly defaced inner surface; 1/12 extant.
62. E-II/2 (R14): Body of painted carinated bowl; panel pattern; greenish inner surface (7.5Y8.5–8/1); greenish outer surface and core (2.5GY8.5/1); dark olive paint (2.5Y5–4.5/2); a little very fine sand and vegetable (1–2mm) temper; fine fabric; scraped on lower part of outer surface after scraping; part of section is worn out artificially; as well-fired, paint is changed like glaze; Max. diam.: 9–10cm; 1/5 extant.
63. D-II/1: Lower body of painted carinated bowl or small jar; concentric arcs; creamy buff inner surface (like reserved slip) and core (7.5YR8–7.5/3); pale beige (slip) outer surface (10YR8.5/2); dark reddish brown paint (2.5YR3.5/2); sparse vegetable (1–2mm) and middle amount of very fine sand temper; relatively fine fabric; wet-smoothed on outer surface after scraping; 1/5–6 extant.
64. R9 (C-II): Body of painted carinated bowl or footed bowl; panel pattern and concentric arcs; buff inner surface and core (7.5YR7.5/2); greenish cream outer surface (10YR8.5/2); dark reddish brown paint (5R4/2–3); a little vegetable (1–2mm) and middle amount of very fine sand temper; wet-smoothed on outer surface of lower body after scraping; Max. diam.: about 14cm; 1/4 extant.
65. R8 (C-II): Rim of miniture painted bowl; greenish surfaces and core (7.5Y8.5/1); dark olive paint (7.5Y4–3.5/1); sparse vegetable (1–2mm) and middle amount of very fine sand temper; wet-smoothed on lower part of outer surface after scraping; hard; Rim diam.: about 9cm; 1/4 extant.
66. E-III/2 (Deposite of R22): Rim of painted footed bowl; panel pattern; creamy (slip) surfaces (2.5Y9–8.5/2); pinkish buff core (10YR8.5–8/3); dark reddish brown paint (10R4/2); sparse vegetable (1mm) and much very fine sand (chalky particles) temper; Rim diam.: about 15–18cm; 1/12 extant.
67. On the floor of O2: Rim of painted footed bowl: P1 pattern; creamy slip surfaces (2.5Y9/2); pinkish buff core (7.5YR8.5/3); very dark reddish brown paint (5R3.5–3/2); sparse vegetable (1–2mm) and a little very fine sand temper; relatively fine fabric; 1/12 extant.
68. Lower level of E-III/1: Rim of painted footed bowl; P1 pattern; creamy buff (slip?) surfaces (10YR8.5/2); pinkish buff core (7.5YR7.5/3–4); dark reddish brown paint (5R4/2); sparse vegetable (1–2mm) and middle amount of very fine sand temper; relatively fine fabric; 1/13–15 extant.
69. Level IV-b at R2: Rim of painted footed bowl; panel pattern; creamy surfaces (10YR8.5/1–2); pinkish core (7.5YR8/3); dark reddish brown paint (5R3.5/3); middle amount of very fine sand, chalky particles and vegetable(2–3mm) temper; defaced surfaces; 1/8 extant.
70. E-III/2 (outside of granary): Rim of painted footed bowl; serrated motifs are drawn on upper and lower parts of body; greenish cream surfaces (10YR8.5/1–2); reddish buff core (5YR6.5–6/3); dark reddish brown paint (2.5R4–3.5/2); middle to large amount of vegetable (1–3mm) and a little very fine sand temper; smoked surfaces; partially distorted outer surface; 1/8 extant.
71. Level IV-b at R4: Painted footed bowl; rows of crosshatched lozenges (upper part) and rows of birds (lower part); light creamy buff surfaces (10YR8.5/2–3); pinkish buff core (5YR7.5/3–4); dark reddish brown paint (5R4/4); middle amount of vegetable (1–4mm) and fine sand temper; containing chalky coarse sand; slightly soft; defaced surfaces; Rim diam.: about 17cm; 1/4 extant.
72. Level IV at R4: Painted footed bowl; P1 pattern (upper part) and panel pattern (lower part); creamy slip surfaces (10YR9/1); pinkish core (5YR8.5–8/3); reddish brown paint (7.5R3–2.5/2); middle to large amount of fine sand, chalky fine sand and middle amount of vegetable (1–5mm) temper; wet-smoothed on lower part of outer surface after scraping; one vertical section is worn out artifically; Rim diam.: about 18–20cm; 1/8 extant.

73. R24/1: Rim of painted large footed bowl; panel pattern; greenish (slip) surfaces (5Y9/2–3); buff and greenish core (5Y8/3, 10YR8.5–8/4); very dark reddish brown paint (2.5R3.5/1); middle to large amount of vegetable (2–5mm) and middle amount of fine sand temper; *Rim diam.: about 30cm.*
74. Level IV-b at R2: Rim of painted footed bowl; P1 pattern; creamy buff surfaces (10YR8.5–8/2); pinkish buff core (5YR8–7.5/3); dark reddish brown paint (2.5YR3.5–3/2); much chalky fine sand and middle amount of vegetable (2–5mm) temper; distinctive shape; Rim diam.: about 30cm.
75. O3: Shoulder of painted jar; rows of slant saw-like motifs; greenish (slip) surfaces (2.5Y8.5/2); pinkish buff core (5YR8–7.5/3); very dark reddish brown paint (2.5R3.5–3/19); much vegetable (2–6mm) and a little fine sand temper; most paint exfoliated; Max. diam.: about 25–30cm.
76. F-II/3 (level IV): Body of painted jar; panel pattern with gazelle and crosshatched circle motifs; greenish creamy white slip outer surface (2.5Y8.5/1); creamy buff inner surface (5YR8/3–4); reddish buff core (2.5YR7–6.5/6); dark reddish brown paint (7.5R4/3); middle amount of fine sand, chalky particles and vegetable (2–6mm) temper; scraped on lowermost part of inner surface; wet-smoothed on lower part of outer surface after scraping; most paint exfoliated; Max. diam.: about 35cm.

DREI FRÜHE SIEGELABROLLUNGEN AUS ASSUR

Evelyn KLENGEL-BRANDT*

Die archäologische Forschung im Iraq hat in Hideo Fuji stets einen Förderer besessen, dem sie viele Initiativen und Leistungen verdankt. Zurückblickend auf verschiedene Begegnungen auf Symposien und Grabungen möchte ich dem Jubilar diesen Beitrag mit den besten Wünschen widmen und hoffen, daß er sein Interesse finden möge.

Unter den wenigen Siegelabrollungen, die bei den deutschen Ausgrabungen in Assur unter der Leitung von Walter Andrae gefunden wurden, sind die auf drei Tonverschlüssen befindlichen zu nennen, die sich in die früheste Siedlungsperiode von Assur datieren lassen. Sie gehören damit zu den raren Zeugnissen dieser Zeit, die bisher vor allem durch die gelegentlichen Erwähnungen in Schriftquellen[1], weniger aber durch archäologische Funde belegt ist[2].

Von den drei hier vorzustellenden Stücken ist nur Nr. 3 in einem näher bezeichneten Kontext gefunden worden, die beiden anderen Verschlüsse können nicht durch ihre Fundlage datiert werden. Die Grabungsergebnisse der letzten Jahre in Tell Brak, Tell Chuera und anderen Fundorten machen es aber möglich, ihre zeitliche Stellung ziemlich genau einzugrenzen[3].

Zuerst sollen die gesiegelten Tonverschlüsse mit ihren genauen Daten vorgestellt werden:

1. Ass 19410-VA Ass 4276, gefunden im Stadtgebiet. Abb. 1.

Fragment eines Tonverschlusses. Gesamthöhe: 2,9 cm. Breite: 5,3 cm. Das Stück hat eine innen flach gedrückte Auflagefläche, die wohl auf eine Gefäßschulter oder eine gerade Unterlage hindeutet. Der obere Teil umschloß einen nach oben schmaler werdenden Gegenstand, der mit mehreren Schnüren gesichert war. Es könnte sich um einen Gefäßhals oder einen Keil zum Verschließen eines Raumes gehandelt haben. Auf der Außenseite ist der Ton glattgestrichen und vollkommen mit Siegelabrollungen bedeckt. Die Tonfarbe ist hell- bis dunkelgrau.

Das Motiv des verwendeten Siegels kann nur mit Schwierigkeiten rekonstruiert werden. Es scheint sich um zwei Abrollungen des gleichen Siegels zu handeln, die einmal längs und einmal quer abgedrückt wurden. Erkennbar ist möglicherweise ein vierfüßiges Tier, unter dessen Körper sich auf der längs gerichteten Abrollung ein Halbkreis mit Strahlen befindet. Unter dem quer gestellten "Tier" sind hingegen nur einige Querstriche sichtbar. Über dem Rücken beider "Tiere" ist ein umrahmtes, mit Gitterwerk versehenes Muster ausgeführt worden. Einmal neben und einmal rechts unter dem "Tier" verläuft eine rechtwinklig geknickte Linie mit henkelartigen Ansätzen an den Seiten, die in einem pfeilförmigen Kopf endet[4].

Bemerkenswert ist die starke Plastizität der einzelnen Motive. Sie deutet auf die Verwendung eines tief eingekerbten Siegelzylinders hin. Sowohl die umrandenden Stege und die Figuren als auch die Gittermuster sind mit großen Höhen- und Tiefenunterschieden versehen.

Das Motiv läßt sich in eine Gruppe frühdynastischer Siegel einordnen, die im nordmesopotamisch-

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1) Die in der assyrischen Königsliste erwähnten "Könige, die in Zelten lebten", sind oft diskutiert worden, auch die historische Stellung von Uspia konnte nicht eindeutig geklärt werden. S. dazu van Driel 1969, 1f. mit weiterer Literatur sowie Yamada 1994, 11 ff.

2) Die Datierung der von W. Andrae als "prähistorisch" bezeichneten Funden ist bisher nicht entschieden worden. Vgl. Haller, Andrae 1955, 9 ff. wo die vorgeschichtlichen Reste im Bereich des Assur-Tempels behandelt werden.

3) Donald Matthews verdanke ich einige Literaturhinweise. Mit U. Moortgat-Correns konnte ich dankenswerter Weise chronologische Fragen diskutieren.

4) Teissier 1984, no. 316.

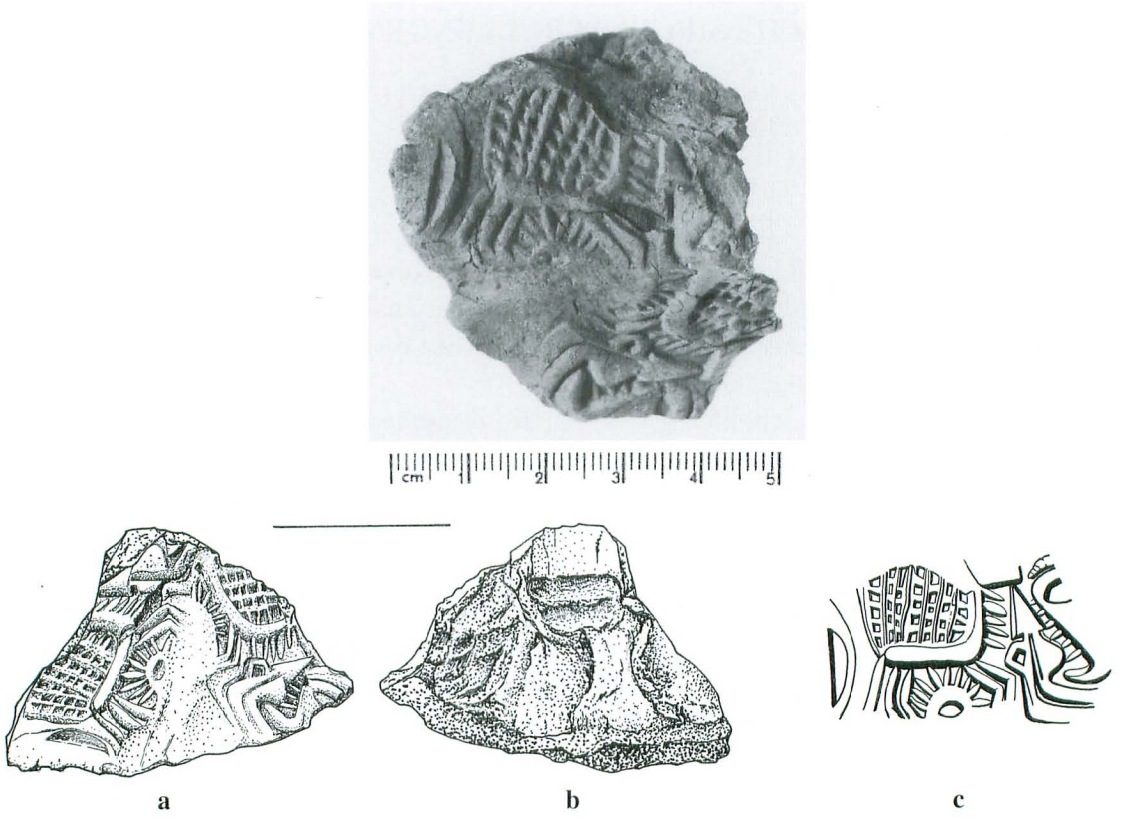

Abb. 1 Tonverschluß Außenseiten Foto.
Tonverschluß Zeichnung.
a. Außenseite.
b. Innenseite.
c. Siegelmotiv.

syrischen Raum beheimat sind[5]. Es handelt sich um recht grob wirkende Figuren von Tieren, die nur in Umrissen ausgeführt sind. Zwischen ihren Beinen und über ihnen sind verschiedene Füllmuster eingezeichnet. Bezeichnend ist die tief eingedrückte plastische Ausführung der Abrollungen. Vergleiche stammen aus Tell Chuera[6], Tell Brak[7] (Abb. 2), Tell Hammam[8] sowie aus Ninive[9]. Der pfeilförmige Abschluß des Nebenmotivs ist auf einem syrischen Siegel aus der Marcopoli Collection zu erkennen, dort scheint er einen Schlangenkopf anzudeuten[10].

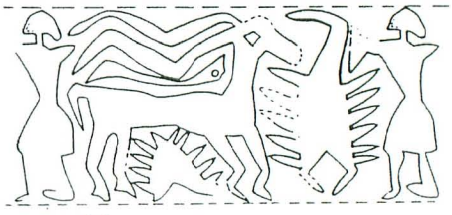

Abb. 2 Siegelabrollung aus Tell Brak.

2. Ass 7389-VA Ass 4276, gefunden im Planquadrat eD 5 III Nordost. Abb. 3.

Fragment eines Tonverschlusses. Gesamthöhe: 4,7 cm, Breite: ca. 2,7 cm. Die Innenfläche ist im unteren Teil glatt ausgestrichen, darüber verlaufen zwei tiefe Rinnen, die ursprünglich Verschnürungen

5) Zum Stil dieser Siegel vgl. Teissier 1984, no. 320–322.
6) Moortgat-Correns 1988, S. 15, Abb. 2a-b, S. 20, Abb. 7a-b, 8a-b.
7) Matthews, D. 1991, fig. 2, no. 14, 16; Matthews, R. J. 1994, p. 184, fig. 4, no. 5, 7; Wiseman 1962, pl. 29 g; Buchanan 1966, pl. 47, no. 727, pl. 51, no. 799.
8) Mazzoni 1992, tav. XLIX, 8.
9) Wiseman 1962, pl. 32c.
10) Teissier 1984, no. 316.

aufgenommen haben, oben biegt der Ton nach innen wieder um. Die glatte Innenfläche weist die Abdrücke von Geweben auf. Es muß sich um die Versiegelung eines verschnürten und mit Stoff umwickelten Gegenstandes, vielleicht eines Gefäßhalses, gehandelt haben. Die Tonfarbe ist gelblich-braun.

Die Außenseite des Tonverschlusses ist mit zwei übereinander angeordneten Reihen eines einfachen Musters versehen. Es ist oben abgegrenzt durch eine Schrägriefelung, darunter verlaufen sich nach unten verjüngende troddelartige Muster, die in einem breiten Fuß enden. Auf dem kleinen, nach innen umbiegenden Tonausläufer sind zwei augenförmige Rauten mit Innenstrichelung und zwischen ihnen befindliche Dreiecke erkennbar.

Eine gute Parallele zu diesem seltenen Motiv stammt aus Tell Chuera, wo U. Moortgat-Correns eine Deutung als Vögel oder eventuell als Fische vorschlägt[11] (Abb. 4). Die Darstellung auf der Abrollung aus Assur spricht mehr für die zweite Annahme. Das ebenfalls auf der Abrollung sichtbare Augenmotiv ist gelegentlich auf Siegeln aus Tell Brak[12] anzutreffen.

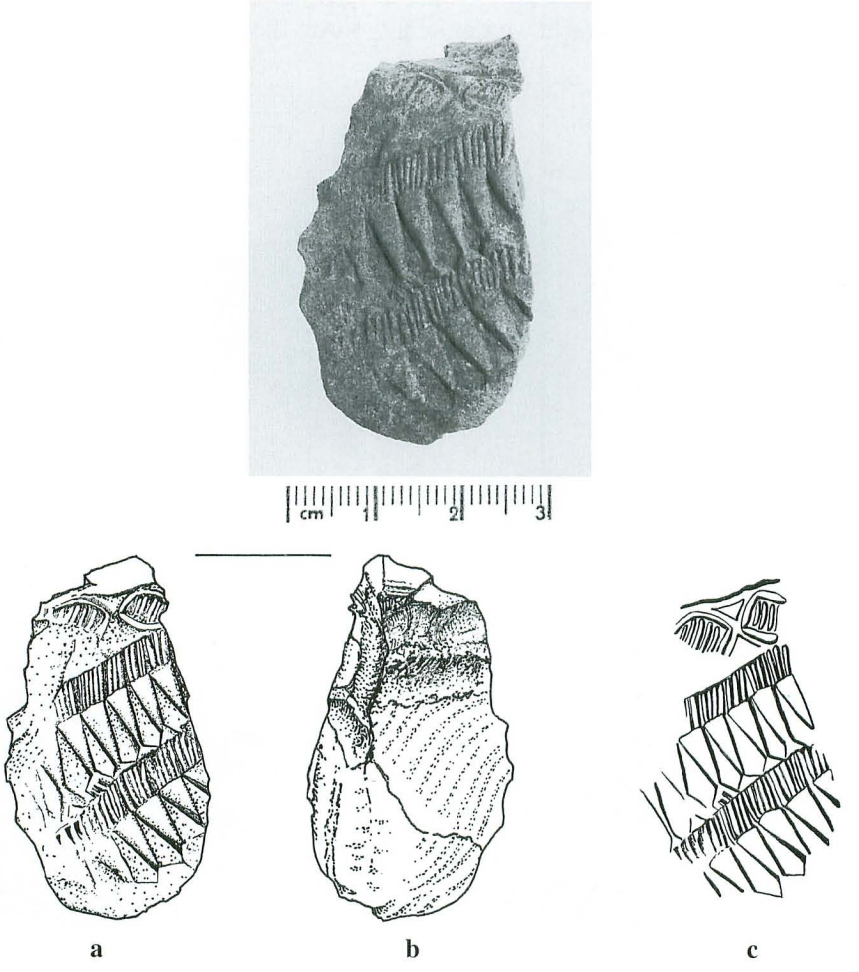

Abb. 3 Tonverschluß Außenseite Foto.
Tonverschluß Zeichnung.
a. Außenseite.
b. Innenseite.
c. Siegelmotiv.

11) Moortgat-Correns 1988, S. 23, Abb. 11a-b.

12) Buchanan 1966, p. 133, no. 727; Hammade 1994, no. 319.

3. Ass 22080-VA 8113, gefunden im Planquadrat eB 6 V vor der Nordwange D1-D2. Abb. 5.

Fragment eines Tonverschlusses. Gesamthöhe: 3,7 cm, Breite: 6 cm. Der Tonverschluss besitzt innen eine breite gerade Auflagefläche, über der die Wandung senkrecht aufsteigt. Sie ist von zwei Kanälen durchzogen, die für die Aufnahme von Verschnürung bestimmt waren. Die Tonfarbe ist rot[13].

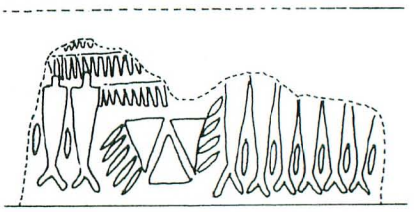

Abb. 4 Siegelabrollung aus Tell Chuera.

Die schräg aufsteigende Außenwand des Tonverschlusses zeigt zwei senkrecht eingedrückte Abrollungen eines Siegelzylinders, die dritte Abrollung ist am Rand angeschnitten. Die gesamte Siegelfläche ist von einem oben und unten durch Striche eingefaßten Gittermuster überzogen.

Der Fundplatz liegt im Außenbereich der archaischen Ischtar-Tempel, in denen zahlreiche Umbauten stattgefunden haben. Wie W. Andrae schrieb, hat gerade die Beobachtung der Schicht D besondere Schwierigkeiten gemacht, da die Mauern durch den viel später errichteten Bau aus der Zeit Salmanassar III. beeinträchtigt waren. Die der Schicht D zugerechneten Kleinfunde können, wie Andrae vorsichtig meinte, auch aus älteren Schichten verbracht worden sein[14]. Aus diesem Grunde sollte bei der Datierung



Abb. 5 Tonverschluß Außenseite Foto.
Tonverschluß Zeichnung.
a. Außenseite.
b. Innenseite.

13) Der Tonverschluß ist bei Andrae 1922, Tf. 59 oben rechts abgebildet.

14) Andrae 1922, 111 ff.

des Siegelabdrucks auf dem Tonverschluß nur auf Grund der stratigraphischen Angaben Vorsicht geboten sein.

Die einfache Musterung dieses Siegelabdrucks besitzt viele Parallelen, von denen hier nur einige aufgeführt werden sollen. Gut datierbare Beispiele stammen aus Tell Mardich/Ebla[15], Hama[16], Tell al-Judaideh[17], Tell Brak[18], Kisch[19] und Ur[20] und aus dem Ankauf[21]. Die frühen Parallelen werden in die Dschemdet-Nasr-Periode datiert, das Muster taucht jedoch auch später immer wieder in der Glyptik auf[22].

Die als Vergleiche für die drei hier veröffentlichten Siegelabrollungen aus Assur gewählten Siegelmotive sind nur Teil größerer Gruppen, und nicht in jedem Fall ist die Übereinstimmung mit den Stücken aus Assur gänzlich überzeugend. Auch bei der Datierung der Vergleichsbeispiele gibt es unterschiedliche Ansetzungen, die zwischen Dschemdet-Nasr-Zeit und Frühdynastisch I bis III differieren. Die Fundsituation vieler Stücke ist nicht nur in Assur wenig aussagekräftig, das gleiche trifft auch mit Einschränkungen auf andere Ausgrabungsstätten wie Tell Brak und Tell Chuera zu. Gesiegelte Tonverschlüsse und Bullen sind bereits im Altertum oft verworfen worden und in den Schutt und die Ablagerungen von Gebäuden geraten, so daß ihre eigentliche stratigraphische Bindung bereits früh verloren gegangen ist. Die Fundsituation ist deshalb selten absolut verläßlich auch zur Datierung des Herstellungs- und Nutzungdatum der Siegelbulle zu verwenden. Die Vergleichsbeispiele werden meist der Dschemdet-Nasr/Frühdynastisch I Periode bis Frühdynastisch III A-Periode zugeschrieben. Das ist eine Zeit, für die in Assur bisher kaum Funde vorliegen[23].

Interessant erscheint die Tatsache, daß die drei hier vorgestellten Tonverschlüsse ihre engsten Parallelen alle im nördlichen Mesopotamien bzw. in Syrien haben. Obwohl sie an verschiedenen Stellen der Stadt Assur in unterschiedlichen Zusammenhängen gefunden wurden, verweisen die Siegelmotive eindeutig auf Kontakte mit den großen blühenden Siedlungen in Nordmesopotamien/Nordsyrien. Es kann nicht nachgewiesen werden, daß die verwendeten Siegel in Assur hergestellt wurden, es kann nicht einmal behauptet werden, daß die Abdrücke auf den Tonverschlüssen in Assur selbst entstanden sind. Nicht auszuschließen ist die Vermutung, daß Gefäße oder andere verpackte und gesiegelte Waren aus dem nordwestlich von Assur gelegenen Bereich von Tell Brak oder Tell Chuera nach Assur geschickt wurden, wo man die Siegel erbrochen und schließlich weggeworfen hat. Aber auch diese Tatsache wäre von Interesse, da sie auf das Vorhandensein einer handeltreibenden Niederlassung im Bereich von Assur schließen ließe. Die Auffindung des Verschlusses Nr. 3 im Bereich der Archaischen Ischtar-Tempel würde sogar einen Hinweis darauf geben, daß sich an dieser Stelle sehr alte Heiligtümer befanden, die weiter zurückreichen als man bisher angenommen hat.

15) Mazzoni 1992, tav. XI A 4, tav. XIX A 42. Sie werden der Frühen Bronzezeit I zugerechnet.

16) Mazzoni 1992, tav. 154 B 113.

17) Braidwood-Braidwood, 1960, p. 331 f. fig. 254 schlanker Siegelzylinder mit Ösenhenkel und Gittermuster aus der Phase G.

18) Hammade 1994, no. 320.

19) Buchanan 1966, pl. 5, no. 69–71.

20) Wiseman 1962, pl. 11 g-1.

21) Teissier 1984, no. 34–36.

22) Buchanan 1966, 10, dort wird darauf verwiesen, daß die glasierten Siegel oder Perlen mit Gitter-Muster über Jahrhunderte angefertigt und verwendet wurden.

23) In seiner Kunstgeschichte hat A. Moortgat auf die stilistischen Zusammenhänge einer Steinplastik aus Tell Brak und einem in Schicht H gefundenen bemalten Terrakottarelief aus Assur hingewiesen, vgl. Moortgat 1982, 44 f. Die Datierung der von Andrae im Archaischen Ischtar-Tempel festgestellten Schichten H und G bedarf neuer Überlegungen, die in diesem Zusammenhang nicht zu leisten sind. Eine Neubearbeitung ist im Rahmen des Assur-Projektes des Vorderasiatischen Museums und der Deutschen Orient-Gesellschaft geplant.

Literaturverzeichnis

Andrae, W.
1922 Die Archaischen Ischtar-Tempel in Assur, *WVDOG* 39, Leipzig.

Braidwood, R. J. and Braidwood, L. S.
1960 Excavations in the Plain of Antioch. I. The Earlier Assemblages Phase A-J, *Oriental Institute Publications* LXI, Chicago.

Buchanan, B.
1966 *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum. Vol. I. Cylinder Seals*, Oxford.

Driel van, G.
1969 *The Cult of Assur*, Assen.

Haller, A. and Andrae, W.
1955 Die Heiligtümer des Gottes Assur und der Sin-Samas-Tempel in Assur, Berlin, *WVDOG* 67.

Hammade, H.
1994 Cylinder Seals from the Collections of the Aleppo Museum, Syrian Arab Republic. 2. Seals of known provenance. *BAR International Series* 597, Oxford.

Matthews, D.
1991 Tell Brak 1990: The Glyptic, *Iraq* LIII: 147–158.

Matthews, R. J., Matthews, W. and McDonald, H.
1994 Tell Brak: a stratigraphic summary, 1976-1993, *Iraq* LVI: 177–194.

Mazzoni, St.
1992 *Le Impronte su giara Eblaite e Siriane nel Bronzo Antico, Materiali e Studi Archeologici di Ebla-I*, Roma: Missione Archeologica Italiana in Siria.

Moortgat, A.
1982 *Die Kunst des Alten Mesopotamien. I. Sumer und Akkad*, Köln.

Moortgat-Correns, U.
1988 *Tell Chuera in Nordost-Syrien. Vorläufige Berichte über die Neunte und Zehnte Grabungskampagne 1982 und 1983*, Berlin.

Teissier, B.
1984 *Ancient Near Eastern Cylinder Seals from the Marcopoli Collection*, Berkely-Los Angeles-London.

Wiseman, D. J.
1962 *Catalogue of the Western Asiatic Seals in the British Museum. I. Cylinder Seals, Uruk-Early Dynastic Periods*, London.

Yamada, S.
1994 Editorial History of the Assyrian King List, in *ZA* 84, 11 ff.

Nachweis

Foto: Fotowerkstatt der Staatlichen Museen zu Berlin. K. März. Zeichnungen: D. Hinz.
Abb. 2: nach Matthews 1991, p. 151, fig. 2, 14.
Abb. 4: nach Moortgat-Correns 1988, S. 23, Abb.11b.

THE SHAIKHAN RELIEF[1]

J. Nicholas POSTGATE* and Michael D. ROAF**

I. Introduction

The Shaikhan Relief[2] has been described several times since its first discovery by Rawlinson in 1836, and the inscription, although difficult, has been edited more than once[3]. Yet another publication might appear superfluous, but the purpose of this article is to make available fresh photographs and drawings of the relief, which add a little detail and accuracy to the earlier ones, to reassess its character and date by a comparison with similar monuments, and to give a more accurate copy of the cuneiform text (which unfortunately can do little more than invalidate some of the previous attempts to make sense of it, without achieving any startling new results)[4].

II. The location of the Shaikhan Relief[5] (Figs. 1 and 2)

Members of the British Archaeological Expedition to Iraq visited the relief in early June, 1979, in the company of a representative of the State Organization for Antiquities and Heritage, and several members of the Iraqi army. Many thanks are due to the Director General of Antiquities and to all the other Iraqi colleagues and officials who made our visit not only possible but pleasant. At the time the British expedition was working on sites in the Hamrin basin, and it is a pleasure to recall in this volume the generous hospitality of Professor Fujii and his team on several occasions when we visited their work at Tell Gubba and Tell Songor.

After crossing to the left bank of the Diyala (or Ab-i Sirwan as it is called in this region), and checking in with the authorities at the *nahiyah* of Maidan, our road led to the south-east, across flattish land, upstream along the right bank of the Abbassan[6] river, a tributary of the Diyala. This river flows at the centre of a broad shallow valley between barren hills, the range to the east being the Kuh Bamu, rising steeply to 1790 metres. At the small village of Balula[7], a stream breaks through the first range of these hills to join the river from the north-east, flowing through oleanders and wild vines at the bottom of a deep gorge which has precipitous cliffs each side in places (see Plate 1b). On one of these vertical sections, along the south side of the gorge, a narrow ledge gives access to the relief which is carved on a smoothed panel, overlooking the ravine from the south-west (Plate 1a, c and d, Plate 2a).

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1) Postgate is responsible for sections II-III, Roaf for sections IV-V. The figures were drawn by Cornelie Wolff.

2) The relief is best known under the name Shaikhan (or Sheikhan), but has also been referred to as the Hurin and as the (Darband-i) Balula relief.

3) e.g. Thureau-Dangin 1907: 172; Farber 1975: 48; not taken up in Frayne 1990; translation in Sollberger & Kupper 1971: 168.

4) Cf. Farber 1975: 48: "scheint es fraglich, ob eine Kollation des Originales entscheidend weiterhülfe"!

5) The position of the relief shown on Herzfeld 1924: Sheet 2, is difficult to reconcile with that on Fig. 2, because the contours and the courses of the rivers of Herzfeld's map differ from those on Fig. 2. On Herzfeld's map only one ridge (labelled Kúh Shaikhán) is shown between the Abbassan River and Kuh Bamu, but on Fig. 2 there are two and it is between these two ridges that the Shaikhan Relief is located. The site is accurately marked on map 59 of the Directorate-General of Antiquities *Atlas of Archaeological sites in Iraq* (Baghdad, 1976), but this map does not show the wadis or contours and the scale is marked as 1:175,000 when it is in fact printed at c. 1:100,000.

6) "Abbassan" on the 2nd World War German army map reproduced here as Fig. 2. Edmonds 1928 has "Hawwasan river (Arabic Abbasan)".

7) "Balula" on the Iraqi antiquities map. We had no opportunity to check the pronunciation with local residents, our contacts being with conscripts from outside the region. The name is given as Beluli on the German army map, and on the sketch in Edmonds 1928: 163, but in his text on p. 162 as Bailula.

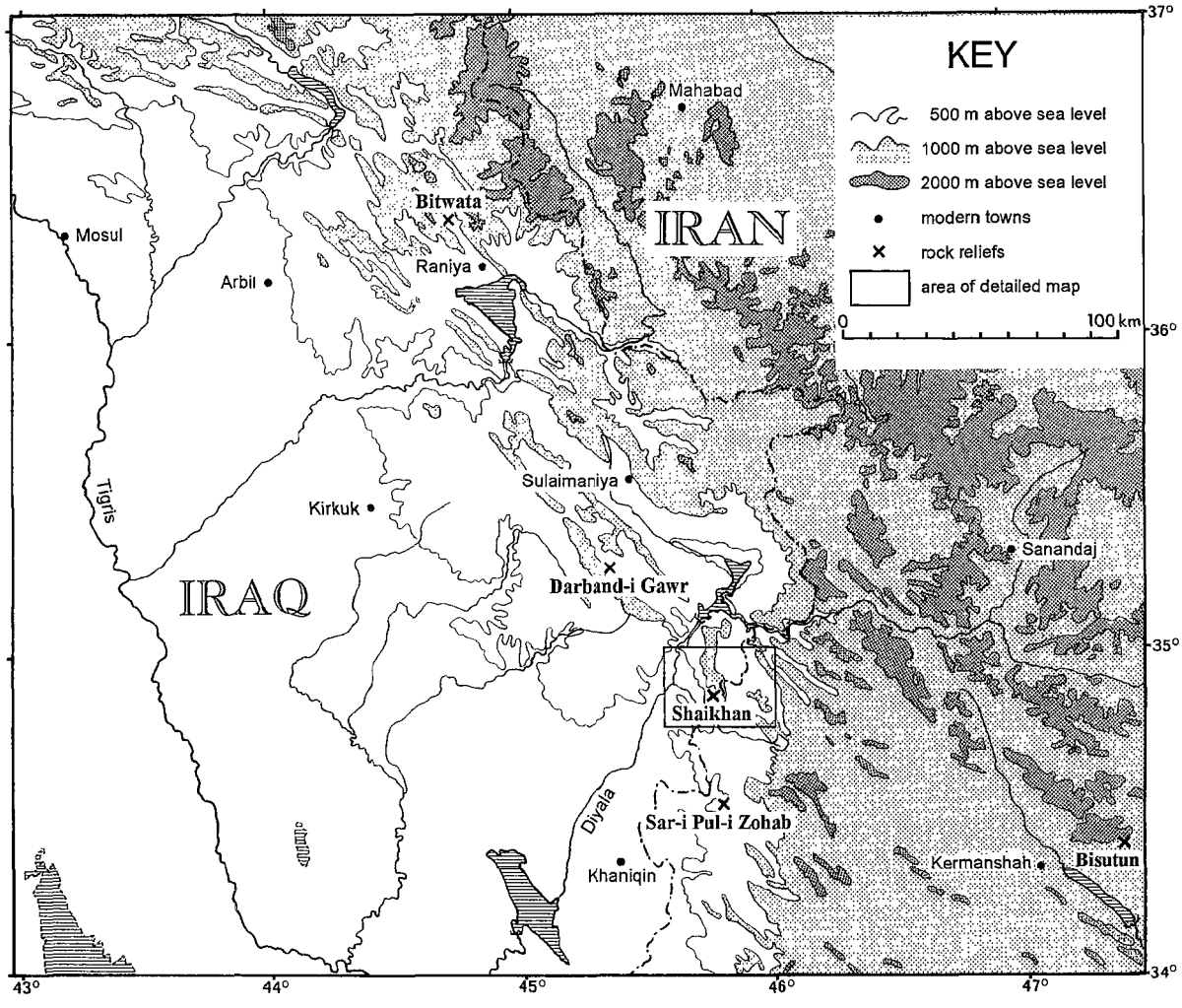

Fig. 1 Map showing the area of the detailed map (Fig. 2) and the locations of the rock reliefs discussed in Part V.

The Shaikhan area is described by Edmonds (1928; 1966: 159). The relief was first reported by Rawlinson, who visited it in 1836. His account (Rawlinson 1839: 31–2), which may be difficult of access to some, seems worth repeating here:

> "To the S. of Húrín, at the distance of 2 farsakhs (the farsakh is a very uncertain measurement, but in this part of Persia it may be valued at 3 3/4 miles), is the village of Sheïkhán[8], so called from certain Sunní dervishes here interred, whose tombs, surmounted with their white cupolas, and embosomed in orchards, form a very picturesque and agreeable object. In the mountain gorge which contains the village is a tablet sculptured upon the face of the rock... [There follows a description of the relief]..... From Sheïkhan to Zoháb the distance is 6 farsakhs; the road recrosses the range by a very easy pass called Sar-Kal'ah, and from thence traverses an open country to Zoháb."

The Abbassan valley thus provides an easy route from the middle reaches of the Diyala to the lands further south. The village and pass of Sarkal (so the German map) are today in Iranian territory, and

8) The name Shaikhan is used today to refer to the district, but the village at the mouth of the gorge is Balula, and we do not know if Shaikhan applies to the village. Modern official transcriptions indicate that Rawlinson's transcription and interpretation of the name are probably correct (as opposed to "Šaiḫ-ḫān", the linguistically improbable version offered by Berger and adopted with hesitation by Farber).

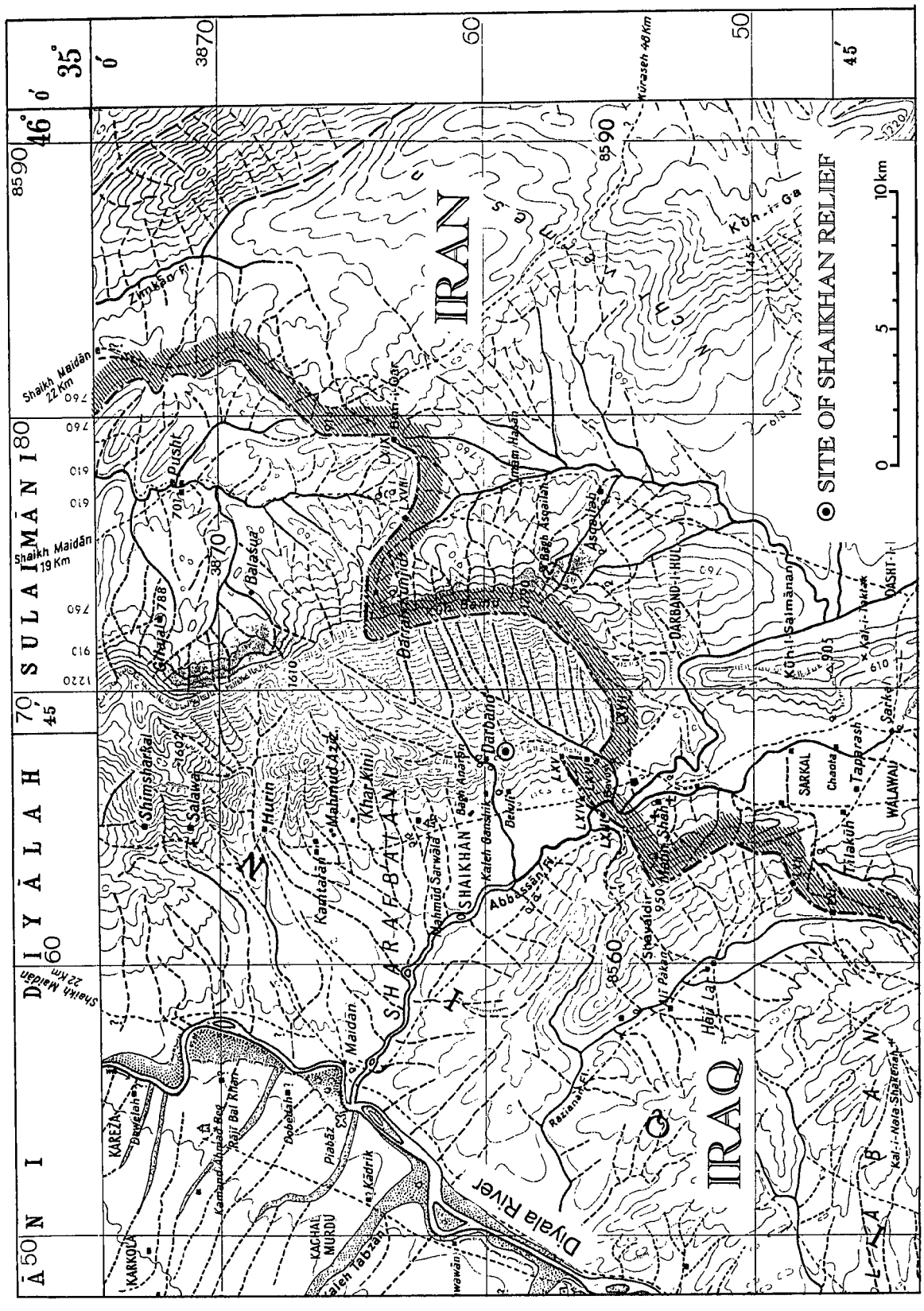

Fig. 2 Part of the 2nd World War German army map with the location of the Shaikhan Relief added.

the distance from our relief to Zohab as the crow flies is about 32 km, with Sar-i-Pul on the Great Khorasan road a further 16 km to the south. The ravine, Darband-i Balula, does not seem likely to have harboured a major route itself. On the relief the triumphant figure stands facing north-west towards the entrance of the ravine, and if it marks the site of a battle, the most obvious interpretation is that it commemorates the victory of people defending their mountain terrain over an invading force (see also below section V).

III. The inscription (Fig. 3, Plate 2c-e)

The original inscription panel measures 35.3 x ca. 7.0 cm. None of the rulings is straight, but the rough widths of the "columns" are: Col. I 9 cm, Col. II 8.5 cm, Col. III 9 cm, and Col. IV 8.7 cm. The hand-copy given here is traced off a positive plaster-cast made on the latex cast of the rock itself, and now deposited in the British Museum (the latex is with the Iraq Museum). Insofar as the position of the individual wedges (or wedge-like marks) goes, the copy is therefore quite accurate; but the first column in particular has suffered obvious damage on the rock itself, and since the spacing is not always regular, we cannot be certain how many signs, if any, are lost. Although water running down the face of the rock has certainly worn smooth some parts of the inscription, at least traces of the wedges remain, and it is unlikely that the inscription continued into Col. IV, which was ruled out by the carver but is now quite blank.

There is no sign on the rock to suggest that the inscription is secondary. Note that the text is arranged vertically on the rock in conformity with the old tradition to which the Stele of Hammurapi also adheres[9].

It will be readily seen that our collation represents, if anything, a step backwards. In detail, taking the edition of Farber 1975, we have the following comments to make:

I 1: only *ir* is certain.
2: only *bi* seems certain; there seemed to be a *ki*-shaped sign on the lower part of the case, but this may be deceptive.
3: if it is *ik*, there is probably a sign between it and the *ki*.
4: the signs as given by Farber seem to be right.

II 1: as Farber.
2: as Farber. Note that the possibility of reading *ma-at za-ba-an* has been specifically considered and rejected.
3: this is a specially frustrating line. There seems no reason to doubt the correctness of *ú-te-* as the first two signs. After that there are either one or two signs. *ru* and *ra* seem equally unacceptable for the last sign: the two long diagonals and the reversed L-shaped wedges seem quite clear, but they do not amount to a *ru*, even less to a *ra*. The only reason for proposing either reading can have been the lack of any alternative. Reasonable sense is given if (as Farber already mentions) we take *tuāru* to mean "take captive" as attested in the Code of Hammurapi.
4: there are only minimal traces of wedges between *i* and *pu*, to the extent that it is uncertain whether there was any sign here at all. *ḫe* is not epigraphically convincing, but does at least give sense. This line strongly suggests that the carver of the stone was copying from a very poorly written or damaged original.

9) The inscription by the divine figure on the Bitwata relief and the inscriptions on the Sar-i-Pul-i Zohab Reliefs I and II are also vertical.

I	1	x (x) ba[?] [x] ir
	2	bi-x [x (x)] x
	3	DUMU x [x x] ki
	4	ib ša aḫ ma[!] at
II	1	ALAM uš-zi-iz
	2	i-na ma[?]-at a-ba-an[?]
	3	ú-te-[(x)-]x
	4	ša ALAM i-ḫe[?]-pu
III	1	pí-ri-šu
	2	ú šu-um-šu
	3	^{d}UTU ^{d}IM
	4	i-lí-a lí- x
I	1	.....
	2	.....
	3	son of .....
	4	.....
II	1	erected an image
	2	when I[?]/he[?].....ed
	3	the land of.....
	4	Who(ever) breaks[?] the image,
III	1	his scions
	2	and his name
	3	may Šamaš (and) Adad
	4	my gods.....

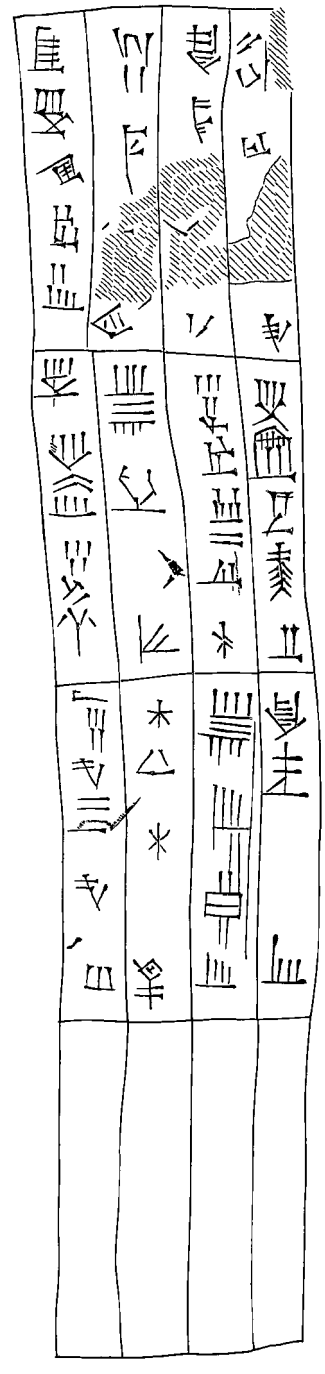

Fig. 3 The inscription on the Shaikhan Relief.

III 1-3: generally agreed.

4: except for a slight scratch(?) before the *i-*, and the break after *a*, the signs in this line are relatively clear. They will certainly not admit the *i-ḫal-lí-qú* suggested by Farber. *i-lí-a* "my gods" makes good sense of the first three signs, but if correctly understood is grammatically unsatisfactory, since we should expect ilū'a or ilā'a (dual) for the subject. In the absence of other occurrences of the signs, it is not clear to me whether the final sign is a KU, a BA or even a SU/ZU.Verbs used to describe the extirpation of an offender's descent include *laqātum*, *nasāḫum*, *ḫulluqum*, and in Old Akkadian *'uḫḫurum*. None of these would provide a form which could be written with *li* plus one further sign; the best I can suggest would be to restore *lí-su* <*-ḫu*> "let them uproot".

If this inscription dates to the Old Babylonian period, the mason was supplied with a draft written by a scribe familiar with the archaic, and hence lapidary, forms of several of the signs (e.g. IM or IB). On the other hand, the form of AD, for instance, looks more modern. A date to the Old Babylonian period as proposed by Farber looks reasonable, but it seems rather extreme to bring it down to the Middle Babylonian. The clear incompetence of the mason, if not also the scribe responsible, makes it difficult to pass verdict.

IV. Description of the Shaikhan Relief[10] (Fig. 4, Plates 2b, 3 and 4)

The Shaikhan Relief is 83 cm wide from quiver to inscription[11]. It shows a main figure, 89 cm high, thus about half lifesize. He faces right in triumph over his enemies who are represented by two smaller figures, one fallen backwards and the other kneeling. The main figure is armed with a bow held in his left hand in front of his body, a dagger held in his right hand, and an axe stuck into his belt. His quiver is shown standing upright behind him under his right hand. He is clean shaven and wears a close-fitting cap with a pronounced fillet divided into three horizontal bands. There is a mark (some indication of his hair or perhaps a lower part of his cap) below the fillet behind his ear, but there is no evidence for his hair visible on his forehead. Round his neck is a necklace with a central circular bead divided vertically into four from which hangs a large circular pendant. The upper part of his body is bare to judge by the indication of breasts and nipples. His belt is wide and plain, and he seems to be barefoot. He wears a garment with a fringed edge which appears to be open at the front over a plain knee length skirt.

The bow is made up of two rather broad sections meeting at the main figure's left hand. The bowstring is shown as a raised band on the stone but the method by which it was fastened to the bow is not discernible. The quiver stands on its narrow base. The body of the quiver is divided into three equal parts by four horizontal bands. From the top of the quiver comes a rather narrower object divided vertically into five parts: these presumably represent the flights of the arrows in the quiver. The blade of the dagger held in the right hand is wide and triangular, but the hilt cannot be seen. The shaft of the axe ends rectangularly. The head of the axe is difficult to understand. It seems to be a single bladed axe with a slightly convex cutting edge parallel to the shaft. The axe is a socketed axe with the shaft going right through the head and above and below the body of the axe are raised bands[12].

The minor figures are less clearly depicted. Both are clean shaven and have short hair. A line across the thighs of these figures may indicate the bottom of a short skirt or tunic but this is not certain. They both hold up their hands in front of their faces in what must surely be a gesture of submission. The right hand figure is shown kneeling in front of the main figure. The main figure's front foot rests on the outstretched leg and upper body of the second minor figure who has his other leg folded under him. Behind the kneeling figure balancing the quiver is the enigmatic inscription discussed above in section III.

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10) This description is based on the examination of photographs and a Latex squeeze made by Mr. Postgate. I have not visited the site or checked the description or the drawing with the relief in situ. Fig. 4 was drawn by Cornelie Wolff from a drawing of the squeeze by Wendy Matthews and from photographs of the relief. I am grateful to members of the Institut für Vorderasiatische Archäologie of Munich University for useful comments and criticisms of Sections IV and V.

11) For detailed bibliography of past publications see most recently Börker-Klähn 1982: 139–140 Nr. 33 and Calmeyer 1975. The relief was first mentioned in Rawlinson 1839: 31 and published by Berger 1892. Squeezes were made by Berger, de Morgan and Herzfeld. Photographs of casts made from de Morgan's squeeze have been published (Weber n.d.: Taf. 18; Debevoise 1942: pl. 1). Drawings have been published based on this cast (e.g. Börker-Klähn 1982: Nr. 33), but as Calmeyer wrote "Abbildungen sind in Einzelheiten nicht verläßlich". The only published photograph of the relief itself, that I am aware of, is a very oblique view published in Edmonds 1928 and again in Edmonds 1966: Pl. XLVa (neither are mentioned in Börker-Klähn 1982).

12) These raised bands were interpreted as heavy moulding on the axe by Maxwell-Hyslop 1949: 92–3.

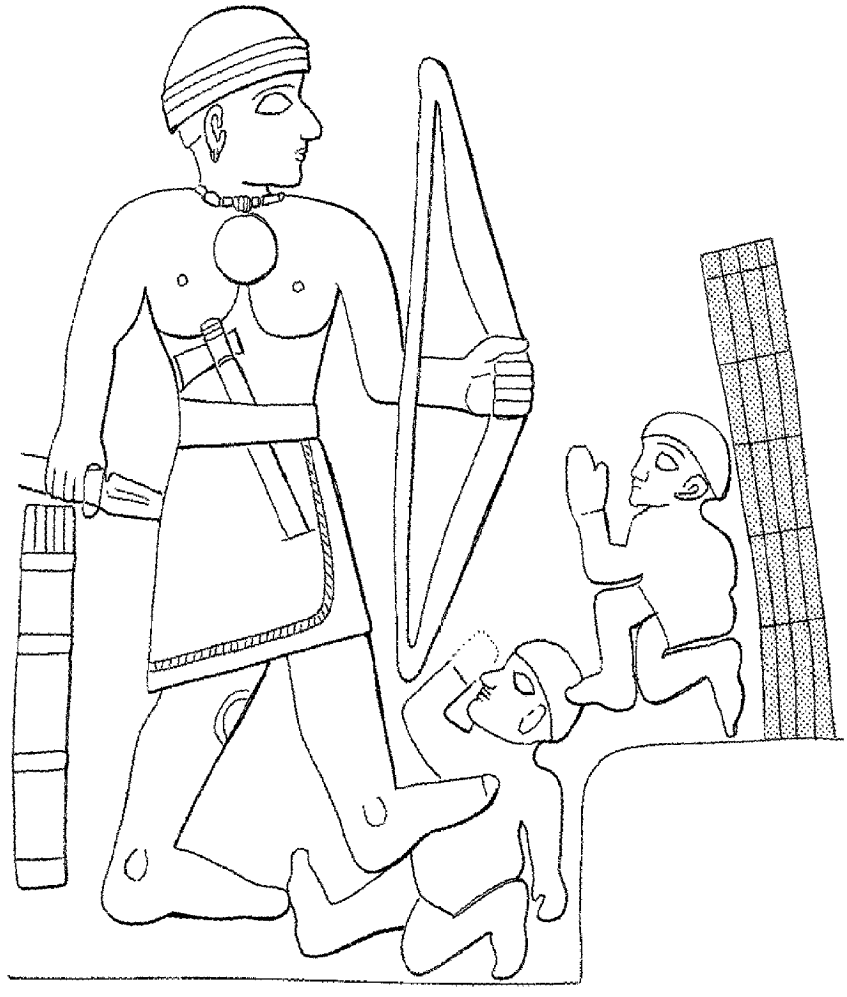

Fig. 4 Sketch of the Shaikhan Relief.

V. Commentary and discussion on the relief

The Shaikhan Relief although frequently mentioned in the literature has not been the subject of much detailed discussion[13]. There are still insuperable problems in the reading of the inscription and the date and authorship of the relief remain in doubt[14]; furthermore the relatively crude carving, aptly described by Edmonds (1928: 162) as "wooden and lifeless", is perhaps more indicative of the work of a local sculptor than of the intransigence of the stone and makes it difficult to state any opinion with confidence. There are, however, two facts that previous commentators agree on: first the traces of the name of the author of the relief and that of his father are not identifiable with any member of the better known dynasties in Elam and Mesopotamia: and thus the Shaikhan Relief and its inscription commemorate the victory of a local chieftain; and secondly, the palaeography of the inscription and the iconography and style of the relief are most consistent with a date between the Akkadian and Middle Babylonian periods[15].

13) For details see Börker-Klähn 1982: 139–140 and Calmeyer 1975.

14) Herzfeld 1968: 156 suggested that the inscription is not contemporary with the relief, but gave no convincing reason for this.

15) Börker-Klähn 1982: 139–140, Farber 1975.

The scene depicted on the Shaikhan Relief of a ruler in triumph over his enemies is found on several other rock reliefs in the same region which are roughly contemporary (Fig. 1)[16]. These are the relief at Darband-i Gawr (Fig. 5)[17] and the four reliefs at Sar-i Pul-i Zohab (Figs. 6 and 7)[18]. The same motif is also shown on the relief which came from Bitwata almost 200 km further north to the north of Rania (Fig. 8)[19], the Victory Stele of Naram-Sin (Fig. 9)[20], which is closely related to the Darband-i Gawr Relief, and the relief of Darius I at Bisutun, which was probably partly inspired by the reliefs at Sar-i Pul-i Zohab[21].

Some of the similarities and dissimilarities between these reliefs are recorded in Fig. 10[22]. This table shows that despite the formal similarity in composition the details of the iconography of the Bisutun Relief are quite distinct from the other reliefs. Not all the features are of equal significance: for example, the presence or absence of a bracelet may not be so important. But the common head-dress and the knee-length skirts shown on all the rock reliefs but not on the stele of Naram-Sin suggest that the rock reliefs form a distinct group. On the other hand the small figures beneath the ruler in both the Naram-Sin Stele and in the Darband-i Gawr Relief, who are in almost identical poses with very similar hair styles, presumably suggest that in these cases we are dealing with Mesopotamian rulers conquering the mountain people with their strange hair style, whereas in the other reliefs it seems more likely that they depict local rulers. In fact the close similarity between the details of these two reliefs suggests very strongly that the Darband-i Gawr Relief was copied from the Naram-Sin Stele[23].

Returning to the table we can see that the Shaikhan Relief has more features in common with the Darband-i Gawr Relief than it has with the Sar-i Pul-i Zohab and the Bitwata Reliefs. The Shaikhan and Darband-i Gawr Reliefs both have shaft-hole axes instead of holding crescentic axes behind them in their right hands, both have two figures beneath the feet of the main figure, and neither has divine emblems. On the other hand the rulers on the Sar-i Pul-i Zohab, Bitwata, and Darband-i Gawr Reliefs all carry their bows against the chest. Anubanini on the Sar-i Pul-i Zohab Relief II and the ruler in the Darband-i Gawr Relief have beards. Furthermore a goddess was carved on the Bitwata Relief and on

16) It is interesting to note that in all these reliefs the main figure faces right. This is the case whether a goddess is depicted in front of the figure or not. This suggests to me that on those reliefs where there is only a divine symbol this stands for the figure of the goddess. Where neither goddess nor divine symbol are shown, one might argue that the presence of a deity is to be assumed and that these reliefs conform to the normal Ur III and Old Babylonian practice of representing the most important figure (the deity or in the absence of the deity the ruler) on the right as is seen on steles and in presentation scenes on seal impressions.

17) Strommenger 1963. Fig. 5 is based on the photographs published by Strommenger.

18) Hrouda 1976. Figs. 6 and 7 (Reliefs I and II at Sar-i Pul-i Zohab) were drawn from photographs taken by Leo Trümpelmann and published by Hrouda. The sketch of Relief I in Börker-Klähn 1982 shows the right arm incorrectly.

19) al-Fouadi 1978, according to whom this relief was acquired by the museum of the Hebrew University in Jerusalem. It has been on exhibition in the Israel Museum in Jerusalem with the number 71.73.248 and has an unpublished inscription which names Iddi(n)-Sîn, king of Simurrum, and his son Zabazuna or Anzabazuna. Three other inscribed stone blocks with the same names also came from Bitwata and are now in the Iraq Museum. It is probable that it was Zabazuna rather than his father who commissioned these works. The top part of the slab with the goddess and her left arm (shown in al-Fouadi 1978: Fig. 7) were not on display in Jerusalem, but the lower part of the relief which was not illustrated by al-Fouadi was. The face of the goddess appears to have been restored. The sketch published here is based on the photographs published by al-Fouadi and on a colour slide supplemented by freehand sketches of some of the details and it may not be correct in all details. The export of this relief to Israel appears to be a clear example of the illegal trade in antiquities and the relief should according to international law be returned to Iraq as Prof. Fujii would surely agree. The inscription is published in al-Fouadi 1978 and Gelb and Kienast 1990: 379–81. The inscriptions now in Jerusalem have not been published. For an inscribed seal with the name of (An)zabazuna see Sollberger 1982 (or Frayne 1990: 715) and Collon 1982: no. 451.

20) Harper, Aruz, and Tallon 1992: 166–8, Börker-Klähn 1982: 134–6, Bänder 1995, Nigro 1992. Fig. 9 is based on photographs published in these works.

21) Luschey 1968: 68; Root 1979: 196–201.

22) The table is based on published photographs. Since the reliefs are not always well-preserved and the photographs do not show all details, this table may not be correct in all details, and should not be considered definitive.

23) Or both are copies of an unknown original. In any case because of the Breitrandkappe (see below) the Darband-i Gawr Relief is usually dated later than the Akkadian period.



Fig. 5 Sketch of the Darband-i Gawr Relief.

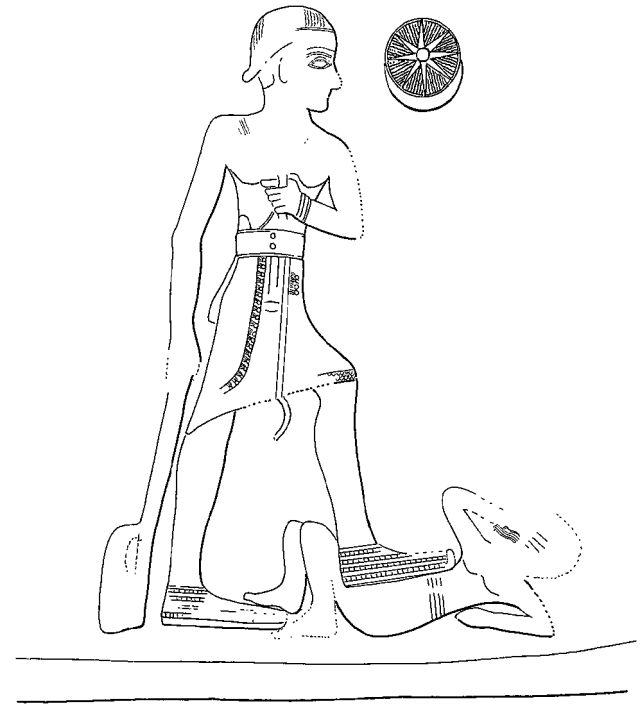

Fig. 6 Sketch of Sar-i Pul-i Zohab Relief I.

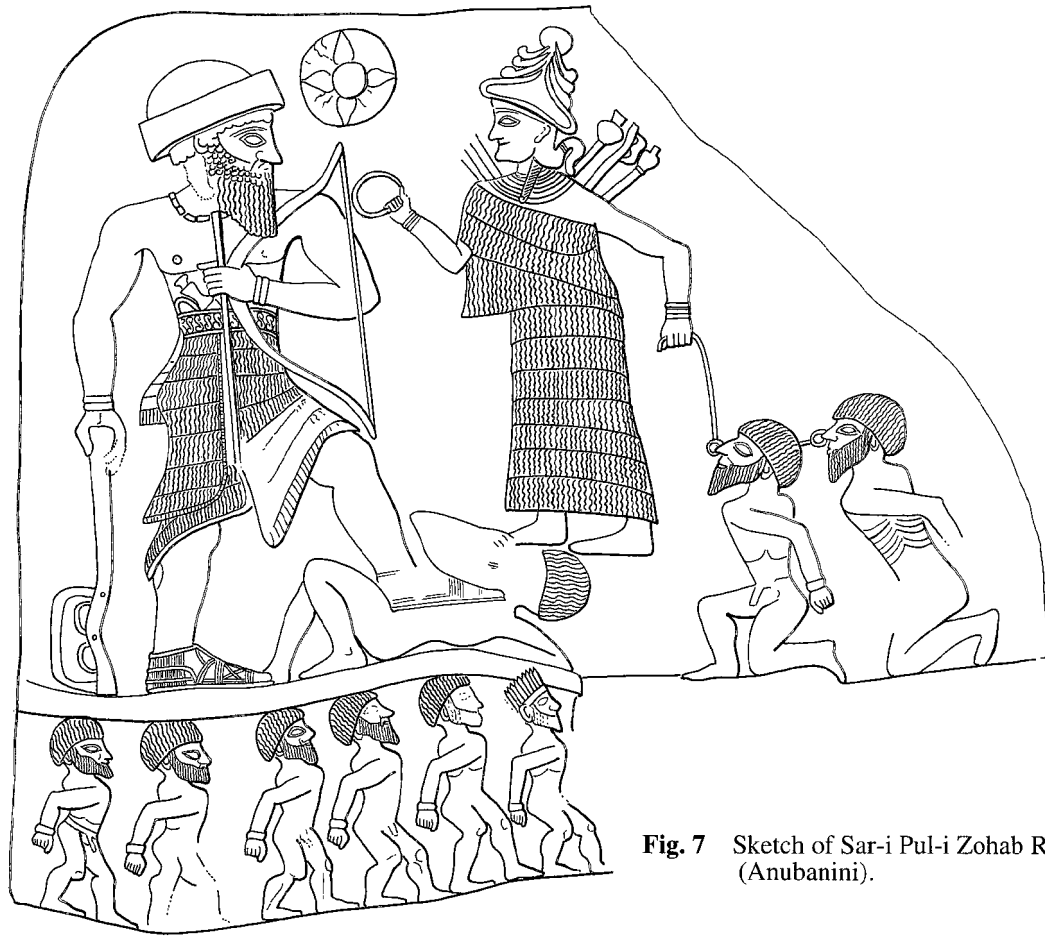

Fig. 7 Sketch of Sar-i Pul-i Zohab Relief II (Anubanini).

Sar-i Pul-i Zohab Reliefs II, III, and IV. It is not possible to establish with certainty the chronological sequence of the Sar-i Pul-i Zohab Reliefs[24] nor their exact relationship to the Bitwata Relief[25]. Some details of the clothing (such as the tuck above the belt at the back) of the ruler on the Bitwata Relief and on Reliefs I and II are very similar. The defeated enemies on the Bitwata Relief and Relief II at Sar-i Pul-i Zohab have short hair and beards and have similar poses. In appearance the Bitwata Relief looks less provincial and more mainstream Mesopotamian. The goddess on Sar-i Pul-i Zohab Relief II inelegantly stands on top of the defeated enemy. Thus if one were copied from the other, it would seem more likely that the Bitwata Relief was the model for the Sar-i Pul-i Zohab Relief than the converse. Since, however, Bitwata was carved some 200 km from Sar-i Pul-i Zohab, it is perhaps more likely that they were inspired by some other works. The motif of the king trampling his enemy was common on reliefs, plaques and cylinder seals, particularly in the Old Babylonian period[26].

Thus from a comparison of these reliefs we can say that the Shaikhan Relief is probably later than the Darband-i Gawr Relief. The four reliefs at Sar-i Pul-i Zohab are clearly copied from each other. It is not certain which is the earliest but whichever it was it is likely that the inspiration for them and the Bitwata Relief did not come from the Shaikhan Relief and the Shaikhan Relief was not copied from the Sar-i Pul-i Zohab or Bitwata Reliefs, so we need not consider them any further here.

Although I have suggested that the Darband-i Gawr Relief was copied from the Naram-Sin stele, this need not mean that it represented the same ruler or even belonged to the Akkadian period. Boese has argued for a date in the Ur III period largely because of the head-dress (Breitrandkappe) of the main figure in the Darband-i Gawr Relief, which he thought should be dated after the Akkadian period[27]. The earliest certainly dated known examples of this type of headgear belong to the time of Gudea and thereafter similar hats are found in the Ur III and Old Babylonian periods (e.g. Ur-Nammu, Hammurapi, etc.). The head-dress on the Shaikhan Relief is not exactly the same as that on the Darband-i Gawr Relief but there is no reason to think that it is earlier.

Otherwise the iconographic details of the two reliefs are difficult to date: the axe and dagger are of types which remained in use for millennia, quivers are too rarely and too indistinctly depicted in the second and third millennia to indicate a firm date[28], and the dress on the Shaikhan Relief is not particularly

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24) Hrouda 1976 suggested that Relief I should date to between Ur III and Old Babylonian, II and III to the First Dynasty of Isin, and Relief IV to Late Old Babylonian after Samsuiluna year 5 because of the elongated proportions of the figures. This dating is plausible but not certain. Local sculptors working on the mountains may not have followed exactly the fashions in sculpture established in the lowland plains of Babylonia.

25) The similarity between the curse formulae in the inscriptions of Relief I at Sar-i Pul-i Zohab and of Bitwata noted by Edzard 1973 might suggest a close connection, but Frayne (1990: 712 and 707) overstates the case when he states that Sar-i Pul-i Zohab Relief I "probably belongs to Iddi(n)-Sin or his son Zabazuna" and suggests that Simurrum controlled the region of Sar-i Pul-i Zohab. His dating of Zabazuna, king of Simurrum, as contemporary with Ishbi-Erra the first king of the First Dynasty of Isin, is based on the findspot of a seal impression of "[x-]bazuna, mighty king," at Eshnunna, but there is some doubt about the exact level the impression was found and no certainty that it belonged to Zabazuna, king of Simurrum (Frayne 1990: xxxi, 707, 716).

26) For the Mardin Stele Börker-Klähn 1982: Nr. 111. For examples of terracottas see Opificius 1961: Nr. 480–483, 489; Parrot 1960: Fig. 358c. For examples of seals see al-Gailani-Werr 1988: 20a, 147, 152b, 182e, 183, 185b, 157b, 209a, 231; al-Gailani-Werr 1980: nos. 24, 36, 40e; Collon 1982: no. 472 (interestingly the seal of a king of Harahar, a country which is thought to have been in the Zagros mountains); Buchanan 1981: nos. 710, 746, 762, 901. I am grateful to Dr. Lamia al-Gailani-Werr for information about this motif on Old Babylonian seals.

27) Boese 1973: 15–25. This is most likely correct but there is too little evidence to be certain that the Breitrandkappe was not worn by rulers before Gudea.

28) No actual quivers from the Near East which are reliably dated earlier than the first millennium B.C. are known to me and before this date quivers are only very rarely illustrated. In his article on quivers Calmeyer 1980–83 lists only five depictions of the second and third millennia B.C., two on Agade period stelae, one on an Agade period seal, one on a 12th century kudurru, and one on a Middle Elamite bronze from Susa.



Fig. 8 Sketch of the Bitwata Relief (Zabazuna).

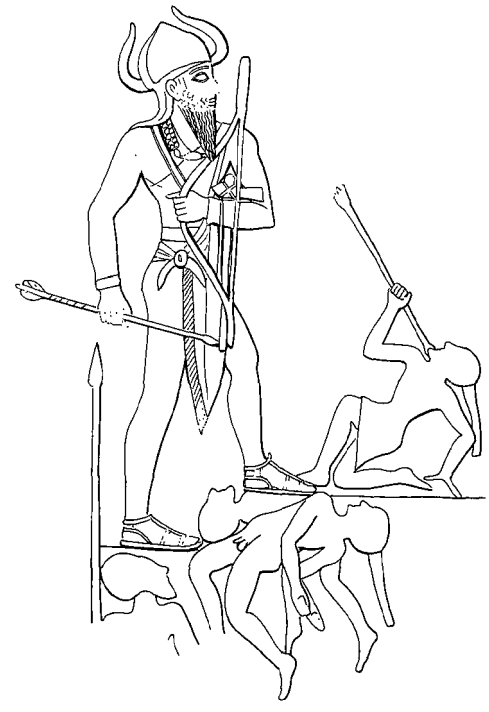


Fig. 9 Sketch of part of the Stele of Naram-Sin.

	Shaikhan Relief	Sar-i Pul-i Zohab Relief I	Sar-i Pul-i Zohab Relief II	Sar-i Pul-i Zohab Relief III	Sar-i Pul-i Zohab Relief IV	Bitwata Relief	Darband-i Gawr Relief	Naram-Sin Stele	Bisutun Relief
MAIN FIGURE									
head-dress	fillet with 3 horizontal bands	??fillet	fillet	probably fillet	fillet	fillet with crescents	fillet	horned helmet	crenellated circlet
hair style	short hair	not clear	short hair	not clear	not clear	short hair	short hair	?short hair	bunched hair
beard	clean shaven	clean shaven	bearded	?clean shaven	?clean shaven	clean shaven	square beard	tapering beard	square beard
necklace	necklace	not clear	necklace	not clear	not clear	necklace	necklace	necklace	none
left hand	bow in front	??bow against chest	bow and ?arrow against chest	bow against chest	bow against chest	bow against chest	bow against chest	bow against chest, axe in crook of arm	nothing
right hand	dagger behind	crescentic axe behind back leg	crescentic axe behind back leg	crescentic axe behind back leg	crescentic axe behind back leg	crescentic axe behind back leg	axe held horizontally	arrow	bow in front resting on foot
bracelet	none	bracelet on left not clear on right	bracelets on both wrists	not clear	not clear	not clear on left bracelet on right	bracelets on both wrists	bracelets on both wrists	bracelets on both wrists
tunic	knee-length skirt	knee-length skirt	knee-length skirt	knee-length skirt	knee-length skirt	knee-length skirt	knee-length skirt	?loin cloth	Persian robe
belt	axe stuck in	nothing	dagger	not clear	not clear	nothing	nothing	nothing	nothing
shoes	barefoot	sandals	sandals	not clear	not clear	barefoot	?barefoot	sandals	shoes
quiver	by right leg	no quiver	no quiver	no quiver	no quiver	no quiver	no quiver	no quiver	no quiver
FIGURES BELOW									
number	2	1	1 and 6 in lower register	1	?1	1	2	3	1
hair style	short hair	?bearded	short hair, ?bearded	not clear	not clear	short hair, bearded	pigtailed	pigtailed	bearded
clothing	perhaps kilt	belt	?naked	not clear	not clear	fringed kilt	?naked/belt	kilt/naked	clothed
DIVINE EMBLEM									
symbol	none	disc/star/crescent	disc/star	disc/??	disc/?crescent	not preseved	none	stars	disc/crescent
figure	none	none	goddess	goddess	goddess	goddess	none	none	god in winged disc
captives	none	none	2 naked	none	none	none	none	none	9 clothed

Fig. 10 Comparative table of features on the Shaikhan Relief, Reliefs I to IV at Sar-i Pul-i Zohab, the Bitwata Relief, the Darband-i Gawr Relief, the Victory Stele of Naram-Sin, and the Darius Relief at Bisutun.

distinctive and may be a local fashion. Furthermore, if it is correct that both these reliefs were copies of earlier works of art, then only the innovations in them should be used as dating criteria.

Given all these uncertainties and the very provincial character of the work I am reluctant to suggest an exact date for the Shaikhan Relief based on the style and iconography. If the Shaikhan Relief was contemporary with the Sar-i Pul-i Zohab Reliefs one might expect more similarities in the details of dress of the main figures, but on the other hand the short hair of the defeated enemies is similar to the hair style shown on Relief II at Sar-i Pul-i Zohab and quite different from the hair style of the defeated enemies on the Darband-i Gawr Relief. And so on balance a date later than the Sar-i Pul-i Zohab Reliefs seems most plausible, perhaps in the first half of the second millennium, but Farber's preferred dating of the inscription to the Middle Babylonian period cannot be definitely ruled out on stylistic grounds[29].

The image of a ruler standing in triumph over his defeated enemy is one that is a vivid expression of military power. J. Cooper has discussed this theme in a Mesopotamian context[30]:

> "the image of the king treading on the defeated ruler in a gesture of victory, as in the Naram-Sin stele, is found in the Utu-hegal inscription as well as in hymns of Shulgi. Curiously, the same posture, which occurs also in the Anubanini relief and later monuments, was portrayed on a relief of Shu-Sin of Ur at Nippur. Although the inscriptions on that lost relief did not mention treading on the defeated ruler, the Old Babylonian copyist mentions '(Shu-Sin) who is treading on the captured king Indasu'."

The adoption of such a theme is an example of a local ruler emulating his more powerful neighbour. There is an irony (whether conscious or subconscious) in the fact that, while the earlier versions of this image of lowland imperial power showed the inhabitants of the mountains as the defeated enemies, those same mountain dwellers adopted the same image to express their own domination of their enemies.

Bibliography

Bänder, D.
1995 *Die Siegesstele des Naram-Sin und ihre Stellung in Kunst- und Kulturgeschichte* (2 vols., Beiträge zur Kunstgeschichte 103, Idstein).

Berger, Captain Leon
1892 "Sculpture rupestre de Cheikh-khan", *Revue d'Assyriologie* 2: 115–120.

Boese, J.
1973 "Zur stilistischen und historischen Einordnung des Felsreliefs von Darband-i-Gaur", *Studia Iranica* 2: 3–48.

Börker-Klähn, J.
1982 *Altvorderasiatische Bildstelen und vergleichbare Felsreliefs* (Mainz am Rhein).

Buchanan, B.
1981 *Early Near Eastern seals in the Yale Babylonian Collection* (New Haven and London).

Calmeyer, P.
1975 "Hūrīn Šaiḫān", *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* vol. 4: 504–5.
1980–83 "Köcher. B. Archäologisch", *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* vol. 6: 45–51.

Collon, D.
1982 *Catalogue of Western Asiatic Seals in the British Museum. Cylinder Seals II. Akkadian, Post-Akkadian, Ur III* (London).

29) Farber 1975: 50. Postgate is sceptical of such a late date for the inscription (see above section III).

30) Cooper 1990: note 35 on p. 50. The inscription is published in Kärki 1986: 115, 117.

Cooper, J.
1990 "Mesopotamian historical consciousness and the production of monumental art in the third millennium B.C.", in A.Gunter (ed.), *Investigating artistic environments in the ancient Near East* (Washington): 39–51.

Debevoise, N.C.
1942 "The rock reliefs of ancient Iran", *Journal of Near Eastern Studies* 1: 76-105.

Edmonds, C.J.
1928 "Two more ancient monuments in Southern Kurdistan", *Geographical Journal* 72: 162–3.
1966 "Some ancient monuments on the Iraqi-Persian boundary", *Iraq* 28: 139–163.

Edzard, D.O.
1973 "Zwei Inschriften am Felsen von Sar-i-Pul-i Zohab: Anubanini 1 und 2", *Archiv für Orientforschung* 24: 73–77.

Farber, W.
1975 "Zur Datierung der Felsinschrift von Šaih-Han", *Archäologische Mitteilungen aus Iran* NF 8: 47–50.

al-Fouadi, Abdul-Hadi
1978 "Inscriptions and reliefs from Bitwata", *Sumer* 34: 122–129.

Frayne, D.C.
1990 *Old Babylonian Period (2003–1595 BC)* (The Royal Inscriptions of Mesopotamia. Early Period, Vol. 4, Toronto).

al-Gailani-Werr, Lamia
1980 "Chronological table of Old Babylonian seal impressions", *Bulletin of the Institute of Archaeology (London University)* 17: 33–84.
1988 *Studies in the chronology and regional style of Old Babylonian cylinder seals* (Bibliotheca Mesopotamica 23, Malibu).

Gelb, I.J. and B. Kienast
1990 *Die altakkadischen Königsinschriften des dritten Jahrtausends v. Chr.* (Freiburger Altorientalische Studien 7, Stuttgart).

Harper, P.O., J. Aruz and F. Tallon (eds.)
1992 *The royal city of Susa: ancient Near Eastern treasures in the Louvre* (New York).

Herzfeld, E.E.
1924 *Paikuli: monument and inscription of the early history of the Sasanian empire* (Forschungen zur Islamischen Kunst III, Berlin).
1968 *The Persian Empire, Studies in the geography and ethnography of the ancient Near East* (ed. G.Walser, Wiesbaden).

Hrouda, B.
1976 *Sarpol-i Zohab* (Iranischer Denkmäler, 7 II C, Berlin).

Kärki, I.
1986 *Die Königsinschriften der dritten Dynastie von Ur* (Studia Orientalia 58, Helsinki).

Luschey, H.
1968 "Studien zu dem Darius-Relief in Bisutun", *Archäologische Mitteilungen aus Iran* NF 1: 63–94.

Maxwell-Hyslop, R.
1949 "Western Asiatic shaft-hole axes", *Iraq* 11: 90–130.

Nigro, L.
1992 "Per una analisi formale dello schema compositivo della stele di Naram-Sin", *Contributi e Materiali di Archeologia Orientale* 4 (1992): 61–100.

Opificius, R.
1961 *Das altbabylonische Terrakottarelief* (Untersuchungen zur Assyriologie und Vorderasiatische Archäologie 2, Munich).

Parrot, A.
1960 *Sumer* (London).

Rawlinson, Sir H.
1839 "March from Zoháb to Khúzistán", *Journal of the Royal Geographical Society of London* 9: 26–116.

Root, M.C.
1979 *King and Kingship in Achaemenid art: essays on the creation of an iconography of empire* (Acta Iranica 19, Leiden).

Sollberger, E.
1980 "Two new seal inscriptions", *Anatolian Studies* 30: 63–65.

Sollberger, E. and J.-R. Kupper
1971 *Inscriptions royales sumériennes et akkadiennes* (Paris).

Strommenger, E.
1963 "Das Felsrelief von Darband-i-Gaur", *Baghdader Mitteilungen* 2: 83–88.

Thureau-Dangin, F.
1907 *Die sumerischen und akkadischen Königsinschriften* (Leipzig: Vorderasiatische Bibliothek 1).

Weber, O.
n.d. *Kunst der Hethiter* (Orbis pictus 9, Berlin).



a



b



c

a Looking from the Shaikhan Relief towards the valley of the Abbassan River.
b The white latex squeeze marks the location of the relief. On the right is the valley shown in **a**.
c An oblique view of the Shaikhan Relief.
d The rock face on which the relief is carved. The relief, which is hard to see, is in the centre towards the top.



d

Pl. 2



a The location of the Shaikhan Relief.



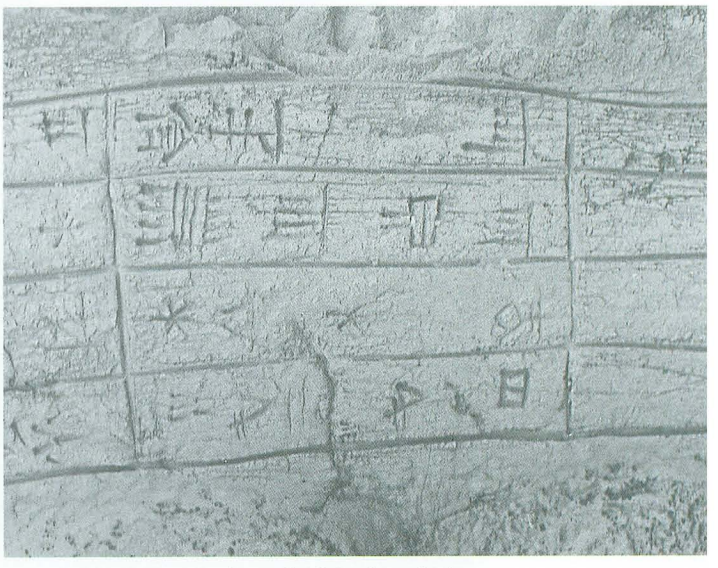
b Oblique view of the Shaikhan Relief.



c The top "column" of the inscription.



d The middle "column" of the inscription.



e The lower "column" of the inscription.



a The upper part of the Shaikhan Relief.



b The lower part of the Shaikhan Relief.

Pl. 4



a The head of the main figure.



b The kneeling figure.



c The skirt and dagger of the main figure.

"CIRCULAR IMPRESSED WARE" IN THE MIDDLE EUPHRATES REGION —DURING THE OLD BABYLONIAN PERIOD—

Kazumi OGUCHI*

I. Introduction

In the early second millennium B. C., regional styles of pottery vessels were created in many places in the Near East, as were regional styles of cylinder seals. Of these, some were prevalent, like the Khabur ware which was popular in the upper Khabur region and north Iraq, some were used only in a narrow region, and some spread widely but in limited number. Distributions of regional styles of pottery seem to prove spheres of trade known from texts.

The Middle Euphrates region was always crucially placed among the surrounding powerful regions or states, as a buffer region. Therefore, the region has provided many archaeological finds under the influence of the surrounding traditions, but some characteristic pottery styles were also created within this region in the early second millennium B. C. This paper takes up the problem of one of the regional pottery styles for discussion. It seems to have been used only in a narrow region and on special occasions. This distinctive style is marked by such incised decoration as simple or concentric circles produced by the stamped method. Therefore I use the term "the Circular Impressed Ware" for denoting this regional style of pottery vessels in the Middle Euphrates region, for the sake of convenience.

II. The Circular Impressed Ware

1. Classification

The material fabric, construction method, colour and finishing of the Circular Impressed Ware were the same as those of other pottery vessels in the Middle Euphrates region. The Circular Impressed Ware is mainly characterized by the decoration. Simple, double-, triple- and quadruple-concentric circles are decorative elements of the pottery vessels, and they are sometimes combined on one vessel.

The Circular Impressed Ware is divided into five types from their vessel forms; Types A, B, C, D and E. There are also some uncertain forms because of potsherds. These potsherds are not classified under the items of Types A to E, and discussed as fragments, although most of these potsherds seem to be of Type C. Type C was the most common type of the Circular Impressed Ware but the other types are rare.

Type A

Only one specimen from 'Usiyeh comes under Type A (Fig.1-1). Fig. 1-1 shows a unique shape. It is a bowl with a plain rim, a flat base and a carination above the base. This shape has been never found among other pottery vessels from 'Usiyeh too. The part between the carination and the mouth is slightly closed or inwarded profile. It is decorated with two rows of double-concentric circles placed between horizontal incised lines.

Type B

Four specimens of 'Usiyeh come under Type B (Fig. 1-2, -3 and -4). Unfortunately, the exact form of

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I wish to dedicate this paper to Professor Hideo Fujii on his 70th birthday. I have joined his expedition, the Japanese Archaeological Expedition in Iraq, since 1978, and worked at the Institute for Cultural Studies of Ancient Iraq, Kokushikan University, since 1983 under his direction. He introduced me to Iraq and has always encouraged me in my work. I thank him sincerely and wish him well.

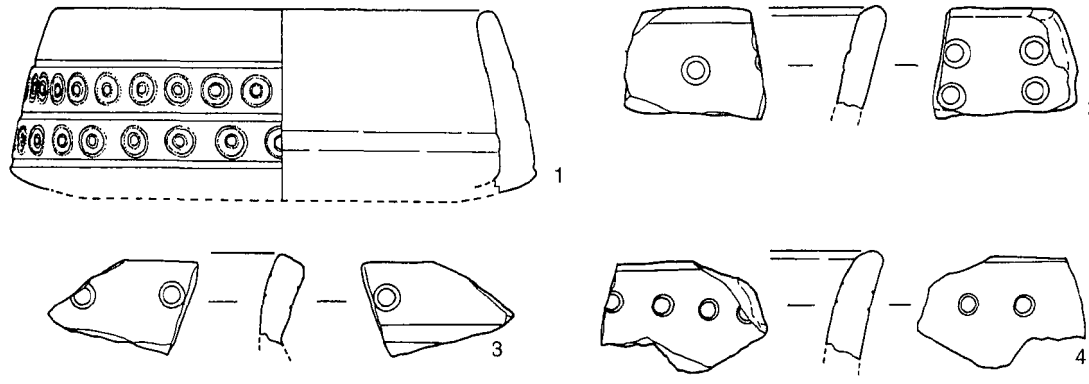

Fig. 1 Types A (1) and B (2–4) of the Circular Impressed Ware from Area A of 'Usiyeh. (Scale: 1/4).

Type B is uncertain; but the specimens may possibly be shallow basins or dishes with plain rims, because decorations are arranged on both interior and exterior walls and the rim diameters are quite large, over 40cm. The decoration of this type seem to be marked by horizontal rows of concentric-circles.

Type C (Figs. 2, 3 and 4)

Type C is the most common type of the Circular Impressed Ware and well represented by Type 5.4 of Haradum (Figs. 2-1, -2, 3-1 and -2). In total 67 specimens (more than 65 percent of the Circular Impressed Ware) were found: 16 specimens came from Haradum[1], and 51 specimens from 'Usiyeh. Some specimens of Type C (Figs. 2-6, 3-6, -7 and -9) were coated with a blackish wash, either on the interior surfaces, or on the exterior surfaces, or both surfaces. The wash is probably for waterproof, and Type C seems to have been used as vessels for some liquid, such as water, wine and beer.

The form of Type C is a globular bowl with a wide mouth. The rim diameter is usually larger than the height, and is equal to or slightly smaller than the maximum body diameter. It usually has a quadrangular rim but sometimes has a triangular rim (Fig. 4-8 and -9). Usually a ridge(s)[2] is placed below the rim. All of the ridges have consecutive notches, except Figs. 2-1 and 4-10 which have a plain ridge(s) [Kepinski-Lecomte 1992: Figs. 72-1 and 142-6]. The size of Type C usually ranges from medium to large. Most of their rim diameters measure between 33 cm and 45 cm, but the specimens of 'Usiyeh are varied in size, measuring between 22 cm and 80 cm. The base of Type C seems to be a rounded bottom according to the evidence of a specimen from Haradum (Figs. 2-2 and 3-1) [Kepinski-Lecomte 1992: Fig. 71-2].

The rim and the ridge are sometimes linked with projections called "buttress" or "column" decorations (hereafter buttress decorations), although these decorations on the Circular Impressed Ware became a mere shell of those decorations[3] and is a characteristic feature. The number of these decorations on one vessel seems to have been irregular. According to the evidence of specimens from Haradum, it was between seven and twelve [*ibid.* Figs. 71 and 72].

These decorations are another characteristic feature of the Circular Impressed Ware, and three types of these were confirmed. Therefore Type C was divided into three sub-types, Types C-1, C-2 and C-3, by the shapes of the buttress decorations. On the other hand, Fig. 4 shows specimens which

1) Among the specimens of Type 5.4 of Haradum, one specimen (Fig. 5-1) [Kepinski-Lecomte 1992: Fig. 71-1] is omitted from Type C of the Circular Impressed Ware, because the height seems to be lager than the rim diameter and it may be a different form. Therefore this specimen is included in Type D.

2) The ridge below the rim is sometimes treated as the part of a double rim. In this paper I treated it as the ridge, because most of the ridges were notched but there is no notched rim in the Circular Impressed Ware.

3) So-called "buttress" or "column" decorations seem to have first appeared in the Early Dynastic III period [Delougaz 1952: pp. 97, 120f., and 149; Pls. 127-a, 143-A.556.423, and 175-C.405.363], then continued to the Old Babylonian period with a gradual change.

have uncertain buttress types or have no buttress decorations within Type C.

Type C-1 (Fig. 2): The buttress decoration of Type C-1 is actually a buttress form, and the buttress projects over the rim side[4]. The buttress usually has a concave side except for Fig. 2-6. Type C-1 was found at Haradum and 'Usiyeh. Fish are inscribed on a specimen of Haradum (Fig. 2-1) [*ibid.* Fig. 72-1]. Similar fish are also inscribed on a fragment of 'Usiyeh (Fig. 7-11). This specimen seems to be of Type C.

Type C-2 (Fig. 3-1, -2, -3, -4 and -5): The buttress decoration of Type C-2 projects over the rim side the same as Type 1, but is not linked to the ridge and is just a projection of the rim side. This type was also found at Haradum and 'Usiyeh. The circle or concentric-circle impression is arranged on the projection and sometimes arranged on the side of the projection, too (Fig. 3-1).

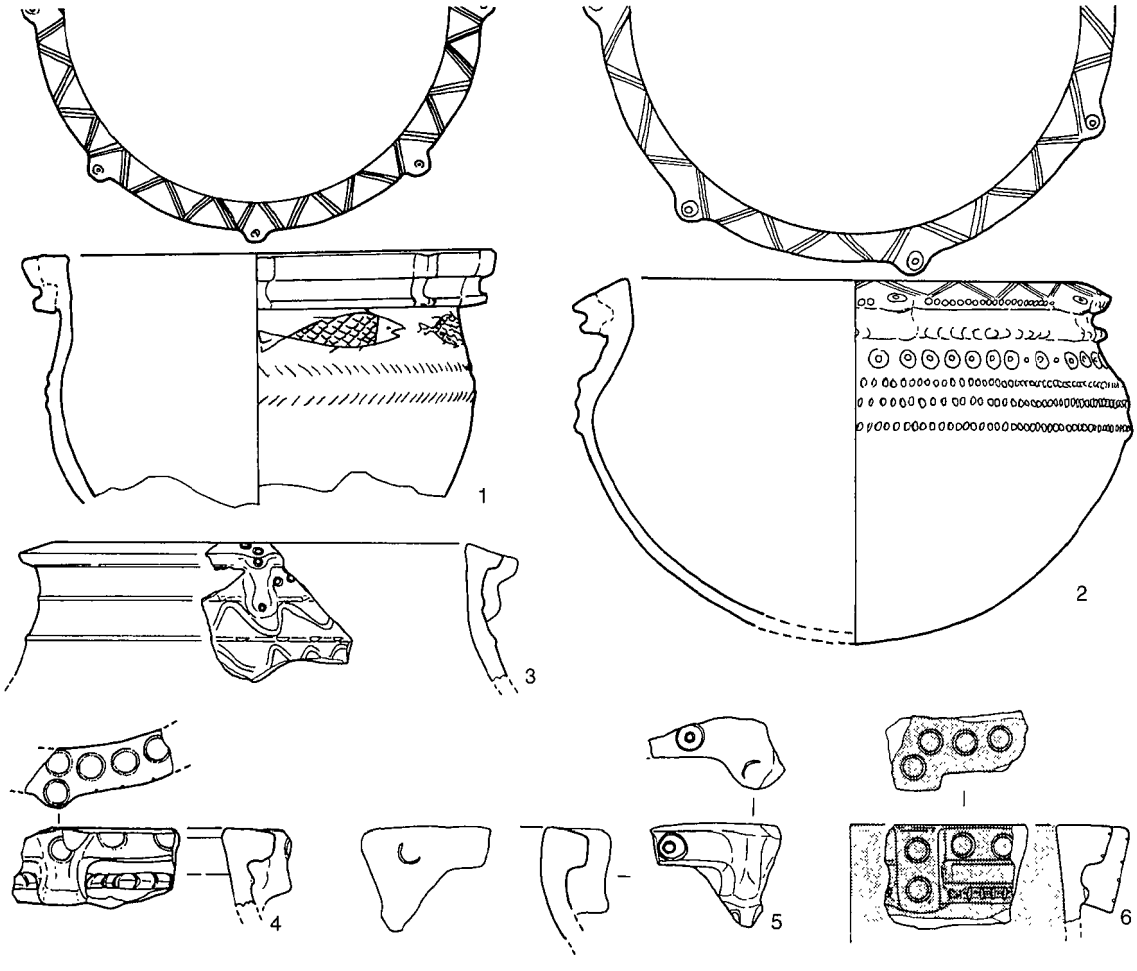

Fig. 2 Type C-1 of the Circular Impressed Ware. (Scale: 1 and 2: 1/6; 3–6: 1/4).

4) As the reference, there are also some buttress decorations, some of which are Type C-1, on the other type of pottery vessels from 'Usiyeh (Fig. 5-4). These pottery vessels seem to be the family of the Circular Impressed Ware, but this buttress seems to have also functioned as a cordeye lug. This is a unique cordeye lug type whose eyelet has pierced not only the lug but also the wall of body. This seems to be a regional feature, and there are many comparable types of lugs at Haradum, although the specimens from Haradum have no such buttress [Kepinski-Lecomte 1992: p. 354, Figs. 66-6, 66-7, 67-1, 67-2, 79-1, 79-2 and 100-9]. Fig. 5-3 has also a cordeye lug like Fig. 5-4, but unlike the aforementioned buttress decoration.

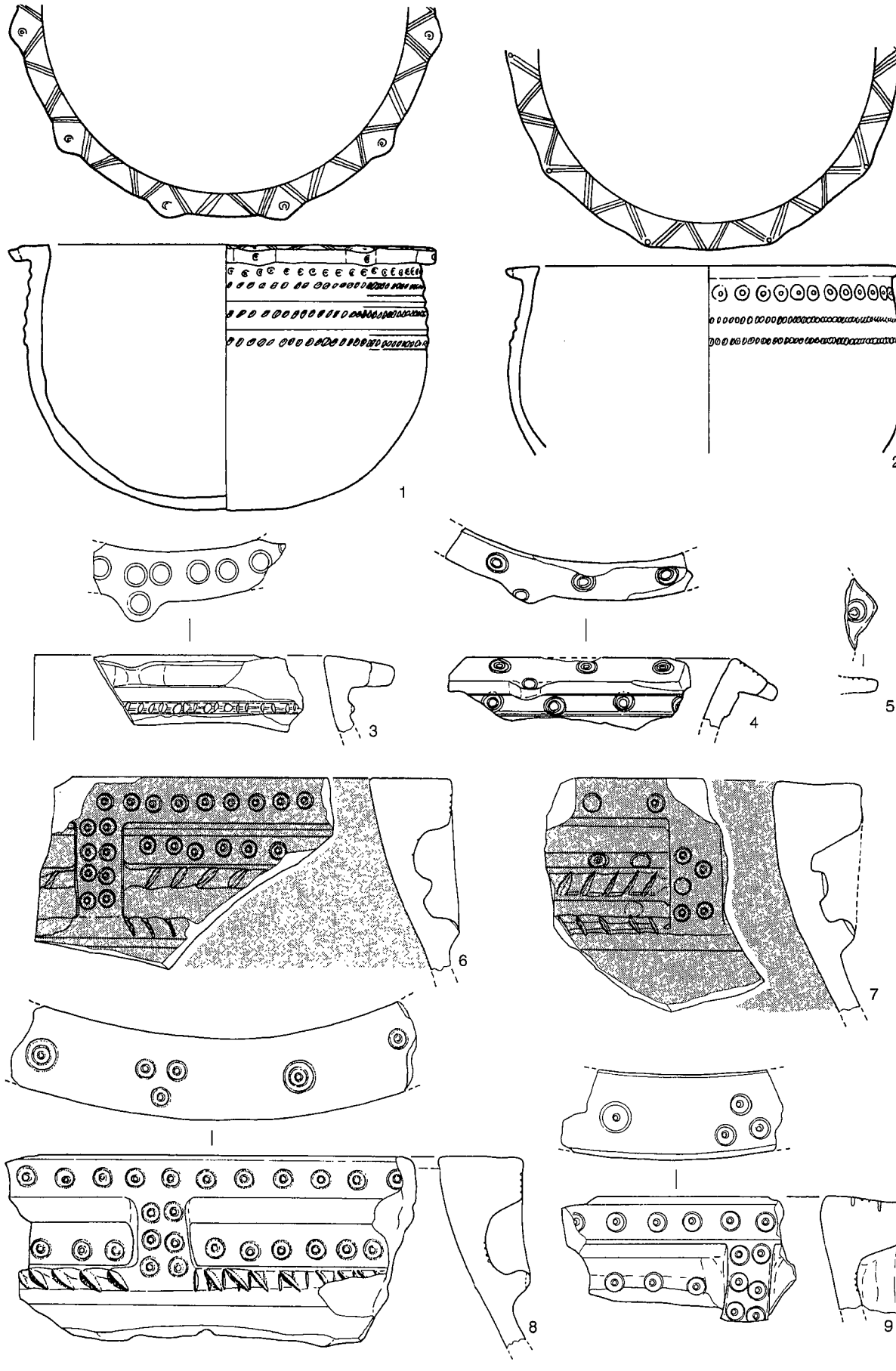

Fig. 3 Types C-2 (1–5) and C-3 (6–9) of the Circular Impressed Ware. (Scale: 1 and 2: 1/6; 3–9: 1/4).

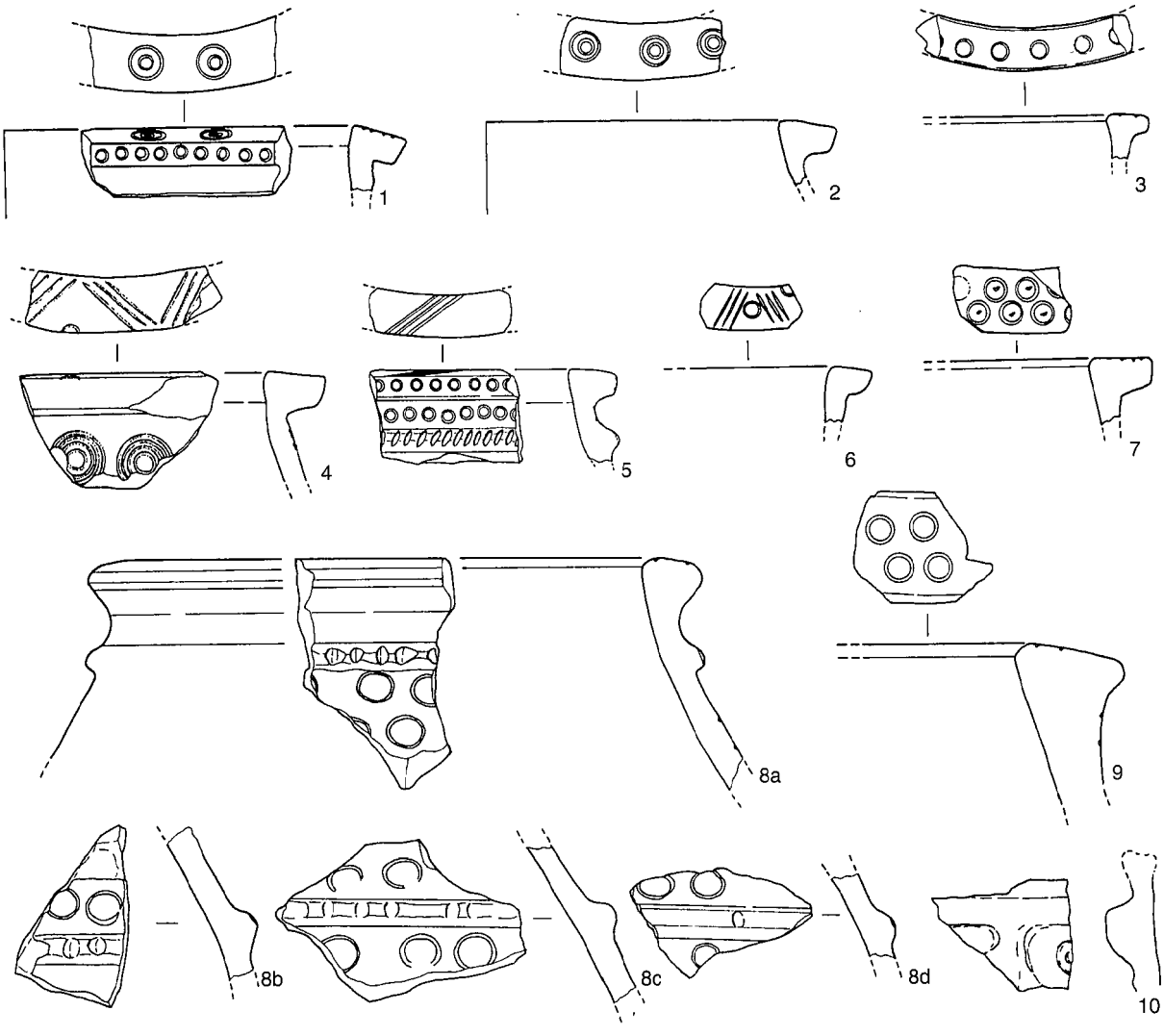

Fig. 4 Type C of the Circular Impressed Ware. (Scale: 1/4).

Type C-3 (Fig. 3-6, -7, -8 and -9): The buttress decoration of Type C-3 does not protrude over the rim side, and just flatly links the rim and the top of the ridge. The buttress is sometimes over a low ridge and links the top of a high ridge placed below the low ridge (Fig. 3-6 and -7). This type was commonly found at 'Usiyeh, but was not found at Haradum. Comparatively, the vessels of Type C-3 seem to be larger than the other types.

The circle and concentric-circle (double, triple and quadruple) decorations are usually stamped on the flattened top of the rim, and are arranged along the rim consecutively. These circle decorations are also arranged on the top and the side of buttress decoration (Figs. 2-3, -4, -6 and 3-1) and are sometimes arranged on the side of rim (Figs. 2-2, -4, -5, -6, 4-1, -5 and all of Type C-3), below the rim (Fig. 3-1, -2, -4), between the rim and the notched ridge (all of type C-3 and Fig. 4-5) or between the ridges (Fig. 4-8). These circles are sometimes intentionally incomplete when arranged at the edge of rim (Fig. 4-4). The circle impressions of Figs. 2-1, -2, 3-1, -2, 4-4 and -6 (also Fig. 4-5?) are arranged within the spaces in the triple (sometimes quadruple) zigzag incised decoration[5]. This arrangement is popular on the

5) This arrangement is also found on a stone vessel at Mari [Parrot 1956: Pl. LII-591; see also Kepinski and Lecomte 1985: p. 617].

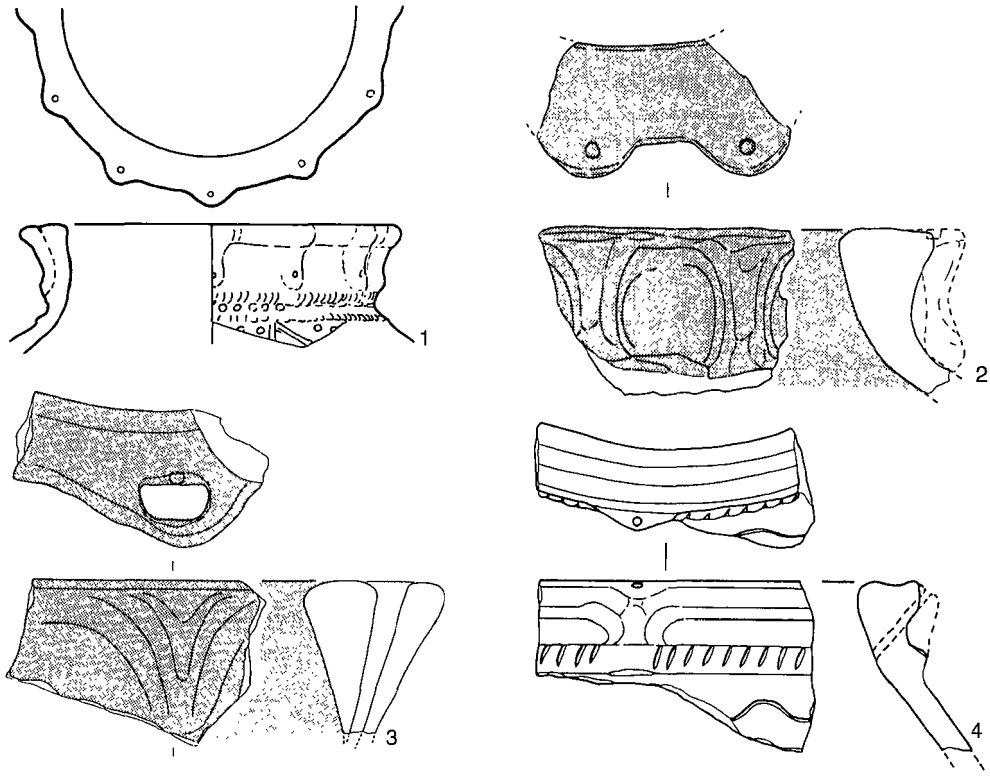

Fig. 5 Type D of the Circular Impressed Ware (1 and 2) and Cordeye Lugs (3 and 4) (see footnote 4). (Scale: 1/4).

specimens from Level 3C of Haradum, and the circle impressions of the specimens from Haradum are always arranged on the top of buttress decorations. Three small double-concentric circles and a triple- or a large double-concentric circle are alternately arranged on the top of rim of Fig. 3-8 and 3-9. Both specimens belong to Type C-3. The centres of circles on Fig. 4-7 have a prick point, respectively. This arrangement seems to originate from decorations of the dot-in-circles on stone vessels. Fig. 2-3 has also some incised wavy decoration.

Type D (Fig. 5-1 and -2)

Type D is a form of jar with a neck, and the height seems to be larger than the maximum diameter. Two specimens come under this type, and are found at Haradum (Fig. 5-1) and 'Usiyeh (Fig. 5-2). Fig. 5-2 was coated with a blackish wash on both surfaces. Type D has also the buttress decorations, which are the same as Type C-1, but are more independent than Type C-1. It seems to be a prototype of the buttress decoration within the Circular Impressed Ware, and the specimen of Haradum was actually found in the lowest level, Level 3D. However, this prototype also became a mere shell of buttress decoration in lower Mesopotamia [*cf.* al-Gailani 1965: Pls. 2-25, 3-26, -27, -28, -29 and -30]. The similar decoration to this prototype is found at Tell Asmar in the Protoimperial period [Delougaz 1952: Pl. 127-c]. The decoration on the top of the vessel of Type D is simple, and only holes are arranged on the each top of the buttress.

Type E (Fig. 6)

The form of Type E is a stand. Nine specimens of 'Usiyeh come under this type (Fig. 6-1 to -9), and one specimen of Haradum seems to be of this type (Fig. 6-10) [Kepinski-Lecomte 1992: Fig. 142-12). Among them, one almost complete specimen of 'Usiyeh shows a regional type of stand in the Middle

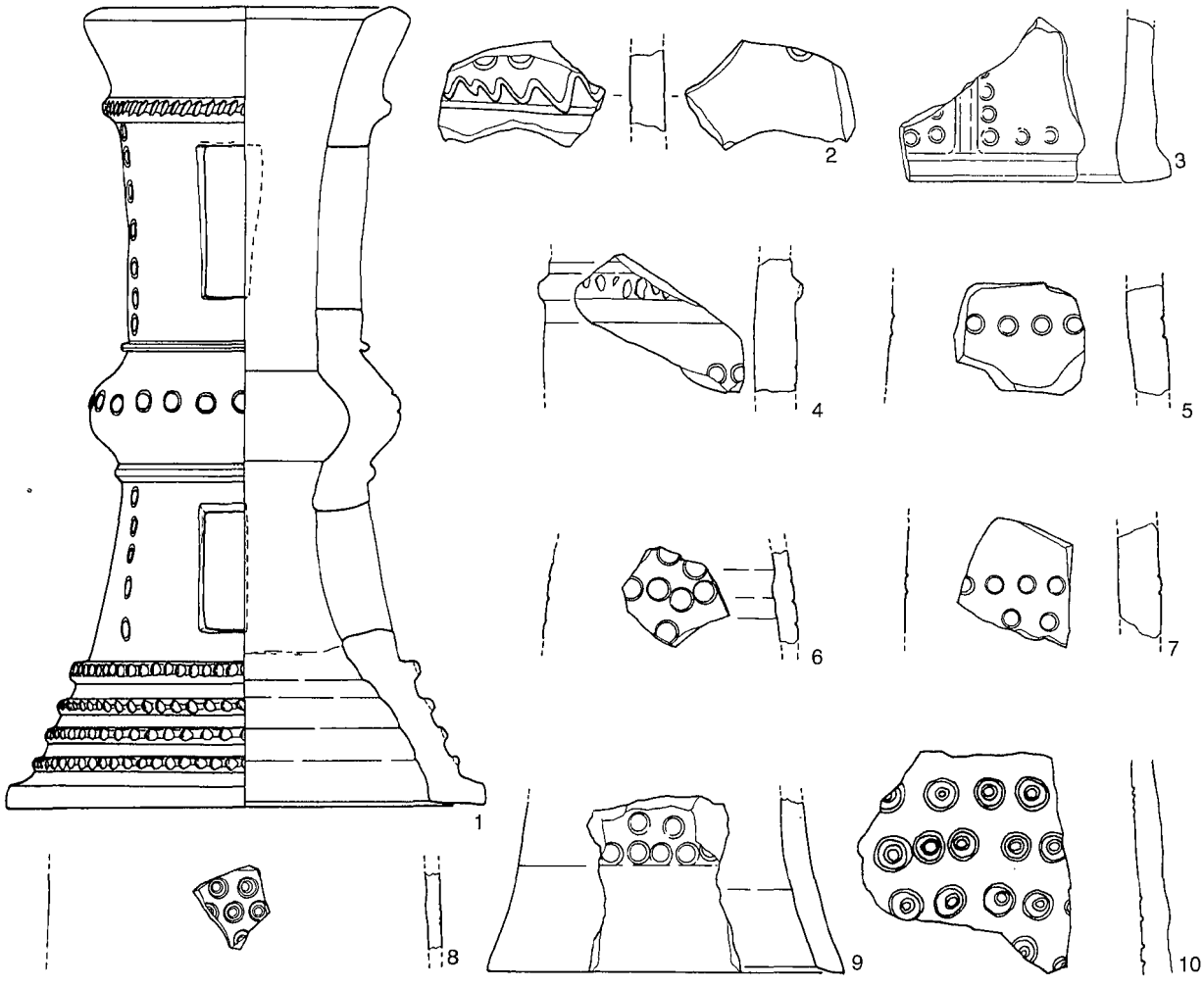

Fig. 6 Type E of the Circular Impressed Ware. (Scale: 1/4).

Euphrates region[6] (Fig. 6-1). It has a swollen sided body, which can be divided into five parts: rim, upper body, mid body, lower body and pedestal parts. The part between the rim and the upper body is separated by a notched ridge. The part between the upper body and the mid body, and the part between the mid body and the lower body are separated by a plain ridge. The upper body and the lower body have three square window decorations[7] respectively. Impressed circle decorations are vertically arranged between the window decorations. The mid body is the swollen part, and is decorated with horizontally running circle impressions. The pedestal part is decorated by four notched ridges.

All of the other specimens of Type E are fragments, and their complete shape is uncertain, although these seem to have been not a swollen sided body. Circle impressions are usually arranged horizontally (Fig. 6-1, -2, -4, -5, -7 and -9), but sometimes irregularly (Fig. 6-6), and circle impressions of Fig. 6-3

6) A characteristic of the regional type of stands in the Middle Euphrates region is to have a swollen sided body. 45 specimens were found in Area A of 'Usiyeh and three specimens were also found at Tell Abu Thor in this region [Okada 1982/83: Fig. 10-118, -120 and -123]. although there is no specimen at Haradum. Some of them are decorated by notched ridges and some of them are decorated by wavy incised lines, although there are also plain specimens. The function of these specimens is not only the stand of a pottery vessel but also the other functions, offering stands, offering tables, altars and vegetable pots, which are sometimes described on cylinder seals.

7) Window decorations are remarkable on the 'Usiyeh pottery vessels, and there is a total of eight specimens. Usually these windows are hollowed out of the wall of the stands or the high pedestals of vessels, and their shapes are a circle, a triangle and a square. Window decorations are rare in the other sites in the early second millennium B. C., but this characteristic decoration seems to have continued though sparsely from the Early Dynastic periods.

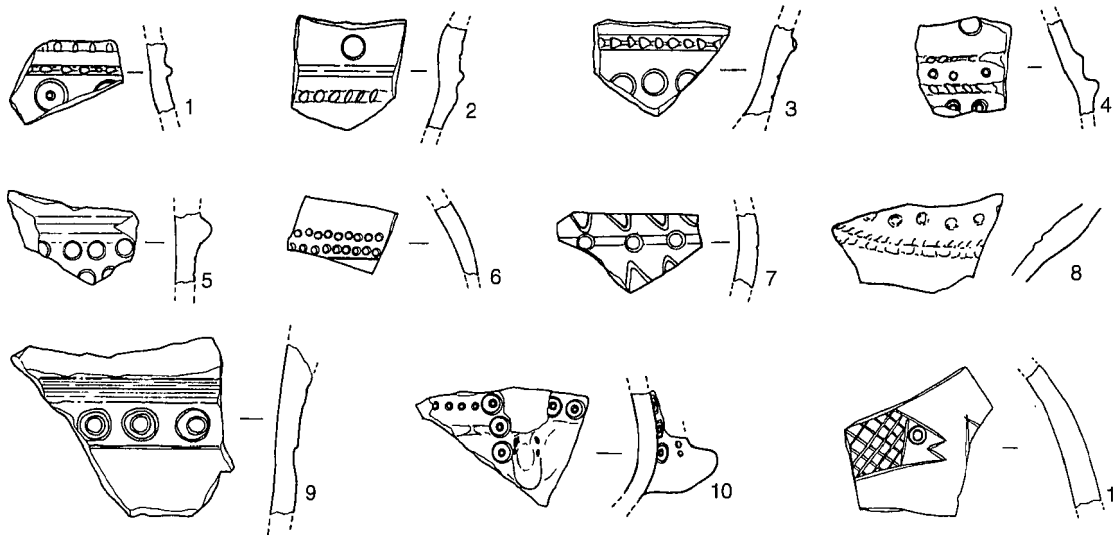

Fig. 7 Fragments of the Circular Impressed Ware. (Scale: 1/4).

are arranged along the hems (ridges) of panels?

Fragments (Fig. 7)
In total 19 fragments of the Circular Impressed Ware have been found. 18 specimens are from 'Usiyeh, and 1 specimen (Fig. 7-8) from Haradum. Most of these specimens seem to belong to Type C, but seem to be slightly small vessels. Some fragments show the possibility that there are also types different from the aforementioned types of the Circular Impressed Ware (Fig. 7-6, -7, -8 and -10).

2. Distribution

Unfortunately the certain distribution of the Circular Impressed Ware is not well known, because it has been so far found only at two sites, Khirbet ed-Diniye (Haradum) and 'Usiyeh. Actually, early second millennium B. C. sites are few in the Middle Euphrates region in Iraq, although many place names are known from the Mari texts. At these two sites, there have been found early second millennium structural remains, while at some other sites, only cemeteries or graves of this date have been confirmed. The excavations at Khirbet ed-Diniye, 'Usiyeh, and the surrounding sites have provided the following information, relevant to this paper.

Haradum/Haradu (*Khirbet ed-Diniye*): Haradum lies on the right bank of the Middle Euphrates river in Iraq, and is located about 36 km north-west of 'Ana and 90 km south-east of Mari. As part of the Qadisiyeh Dam Salvage Project, the site was excavated by the French Expedition under the direction of Dr. Christine Kepinski-Lecomte. The ancient name of Khirbet ed-Diniye was identified as Haradum on the basis of texts found at the site itself, and the name and the location of Haradum were also corroborated by the Mari texts [Joannès 1992: p. 30].

Three main occupation levels were confirmed, and the Circular Impressed Ware was found in Level 3 (*niveau* 3). Structures of Level 3 had a very carefully laid out plan and was surrounded by a thick square town wall measuring about 100m by 100m [Kepinski-Lecomte 1992: pp. 11ff.; Vallet 1992: pp. 15ff.]. The city of Haradum seems to have had the most ordered plan of any Mesopotamian city. There was no occupation level below Level 3. The city, constructed in a systematic plan, was occupied in a short period of time, less than 150 years [*ibid.*]. The city was divided into eight blocks by alleys and each block had six houses.

Level 3 (*niveau* 3) was confirmed as having four sub-building levels, Levels 3D–3A, which were

datable on textual evidence from the site itself [Joannès 1992: pp. 30–36]. Level 3D, probably contemporary with Zimri-Lim of Mari, dated between c.1775 and 1761 B. C. After the 3D occupation, the site had been abandoned in a short period of time. But it had been soon re-occupied in Level 3C, which was dated between c.1725 and 1690 B. C. Level 3B2 was dated between c.1690 and 1675 B. C., and Level 3B1 was between c.1675 and c.1650 B. C. Level 3A was dated between c.1688 and 1628 B. C. [Joannès 1992: pp. 30–36].

The Circular Impressed Ware was found through these four sub-levels, *i.e.* from Level 3D to Level 3A, and in total, nineteen specimens were found. Level 3C is the most flourishing period for the Circular Impressed Ware, and its occurrence becomes rare in Level 3A [Kepinski-Lecomte 1992: pp. 204 and 355][8]. Most of the Circular Impressed Ware found there belongs to the category of Haradum Type 5.4, classified by Kepinski-Lecomte [*ibid.* pp. 208–213], and the others are treated by her as decorated shards [*ibid.* Fig. 142-2, -6 and -12]. Type 5.4 is represented by a decorated large vessel with a globular body; and the mouth diameter is smaller than the body diameter [*ibid.* p. 355]. Type 5.4 mainly came from temples. Thus Kepinski-Lecomte points out that this type shows one of the characteristics of the temple objects [*ibid.*]. Unfortunately the specimens of Haradum are limited in form; but at this site the certain date of the Circular Impressed Ware can be suggested.

'Usiyeh: 'Usiyeh is located on the right bank of the Middle Euphrates river in Iraq and about 30 km south-east of 'Ana. The distance between Haradum and 'Usiyeh is nearly 70 km. The site lies also in the Qadisiyeh Dam Salvage Project area, and was excavated by the Iraqi Expedition and the Japanese Expedition under the direction of Professor Hideo Fujii of Kokushikan University.

Occupation periods of 'Usiyeh were from the Early Dynastic III period to the Islamic period. The Circular Impressed Ware was found in Area A. The structural remains of Area A mainly belong to the early second millennium B. C.[9], and the Circular Impressed Ware must fall within this date. In total, 84 specimens of this ware were found from Area A[10]. Unfortunately the Circular Impressed Ware was found dispersed in around the Area A structural remains. As a result, all the specimens of the Circular Impressed Ware were fragments. Some of them were used for material of the later constructions. On the other hand, 'Usiyeh is really rich in the Circular Impressed Ware in number and in form, and the specimens include stands.

Surrounding sites: There is no clear evidence of the Circular Impressed Ware at Baghouz, Mari and Terqa in the Middle Euphrates region in Syria, although these sites had certain occupation periods of the early second millennium B. C. It means that the distribution of the Circular Impressed Ware did not extend to the upper part of the Middle Euphrates region between the third and the middle of the second millennium B. C. Of course Baghouz, Mari and Terqa had comparable specimens to the other types of pottery vessels at Haradum and 'Usiyeh. The occurrence of the Circular Impressed Ware must probably have been limited within the lower part of the Middle Euphrates region. Therefore it must have been manufactured within this region.

There is also no clear evidence of the Circular Impressed Ware in the lower region, in which sites of early second millennium B. C. are few. As the comparable specimens, impressed decorations of

8) The percentages of Type 5.4 in Level 3 were reported as follows. Level 3D=0.35%, Level 3C=0.53%, Level 3B2=0.00%, Level 3B1=0.00% and Level 3A=0.11% [Kepinski-Lecomte 1992: p. 204: *Pourcentages class 5*]. I tried to replace the percentages with the number of vessels from *'Description des différents bâtiments' in Chapitre 2: L'architecture* [*ibid.* pp. 65–178]. There is some different data between the percentage and the number of vessels on Level 3B1, although the tendency of the flourish period is not different between them. I used the latter date rather than the former.

9) The dates of the main structural remains are possibly between c. 1900 – c. 1600 B. C., but the dates of finds were from the Jemdet Nasr period to the late second millennium B. C. or the early first millennium B. C.

10) 'Usiyeh has white-filled grey ware which was also decorated by some circular impressions. On the other hand, the main distribution of the white-filled grey ware was not in the Middle Euphrates region, and the white-filled grey ware seems to have been imported goods. There seems to have been no direct relation between the Circular Impressed Ware and the white-filled grey ware.

concentric circles and rosettes also occur on the pottery vessels of Tell ed-Dhiba'i [al-Gailani 1965: p. 34 and Pls. 1-16, -17 and -18, and 2-19, -20 and -21], but their forms of vessels are different from those of the Circular Impressed Ware. On the other hand, this type of decorated pottery vessel was discovered only in the burnt temple, and never discovered in private houses [*ibid.* p. 34]. Decorated vessels may have been used as temple objects in the early second millennium B. C. on the ground of the evidence of Haradum and Tell ed-Dhiba'i.

There is a similar specimen to the Circular Impressed Ware at Kudish Saghir near Yorgan Tepe [Starr 1937: Pl. 45-D], but Starr and Elliot seem to believe that it belongs to a prehistoric period [Starr 1939: p. 8 and Elliot 1939: p. 610]. There seems to be no clear comparable specimen at Kudish Saghir and Yorgan Tepe [*ibid.*]. On the other hand, there are many circles or concentric circle decorations on the pottery from Yorgan Tepe [*ibid.* many on Pls. 60, 61, 91, 92, 113, 115, 116 and 117]; but sometimes these were grey ware and the shapes are quite different from those of the Circular Impressed Ware. These seem to be also one regional style of pottery vessels near by Yorgan Tepe.

Sometimes circles or concentric circle decorations occur on pottery vessels in the surrounding regions, but it seems that there was no direct relation between the Circular Impressed Ware and them.

3. Date

According to the evidence of Haradum, the Circular Impressed Ware is certainly dated between 1775 B. C. and 1628 B. C., and the most flourishing period of the ware is placed between 1725 B. C. and 1690 B. C. (see above). 'Usiyeh has no datable evidence for the ware, but the specimens are richer than those from Haradum in number, in form of vessels and in combination of decoration elements. Moreover, the occupation period of Area A of 'Usiyeh was longer than that of Haradum: at Area A of 'Usiyeh, there was occupation from the early nineteenth century B. C. to the late second millennium B. C. Therefore, the first appearance date of the Circular Impressed Ware may possibly precede the date of Level 3D of Haradum, because Haradum has no occupation level below Level 3D. The approximate date of the use of the Circular Impressed Ware seems to be between the time of the nineteenth century B. C. and the late seventeenth century B. C. Anyhow we need new information from future excavations in this region for securely dating the Circular Impressed Ware.

III. Conclusions

At first, pottery vessels decorated with circuler or concentric circle impressions appeared in the Neolithic period, then the impressed decorations are used for one of the technique of the incised decorations for the pottery making. Therefore the definition of the Circular Impressed Ware is difficult. The assemblage of finds at sites and the location of sites need consideration for defining of the Circular Impressed Ware, as are the circular impressed decorations and their forms. Therefore it is difficult to judge the Circular Impressed Ware only from a single specimen which has circular impressed decorations.

The antecedents of the Circular Impressed Ware is not known. On the other hand, the majority of vessel forms, mainly Type C, and the buttress decorations seem to have derived from southern Mesopotamia. Many comparable vessel forms, except for the decorations, were found in many sites in southern Mesopotamia, and these are sometimes decorated with notched ridges and wavy incised lines. Therefore the Circular Impressed Ware must have manufactured under the influence of southern Mesopotamia, and uniquely developed in the Middle Euphrates region with circular impressions and the characteristic buttress decorations. Circular impressions were also used for some regional vessel forms (Types A and B, and Fig. 6-1) in the Middle Euphrates region, as unique decorations.

The Circular Impressed Ware has various forms including stands. Therefore it must have many functions. On the other hand, it is sure that the Circular Impressed Ware made its presence felt, because the small and miniature vessels are less common, and most of other pottery vessels have usually simple

forms without any elaborate decoration and necessities of life. The Circular Impressed Ware must have been made and used for some religious functions, firstly as temple objects. The evidence of Haradum supports this, and finds of 'Usiyeh suggest that there had been some temple in there. Secondly, it was used for some definite function, as vessels for offerings, furniture for the temple and apparatus of some religious services. Thirdly, it must have had some concrete functions.

Unfortunately, the certain occurrence of the Circular Impressed Ware is only at Haradum and 'Usiyeh within the lower Middle Euphrates region, Iraq. These sites seem to have been important towns in the district of Suhu in the early second millennium B. C. Haradum lies the natural northern boundary of the district of Suhu. Trading activities by Haradum extended to Ashur in the east, Emar in the west and Sippar to the downstream, but the sphere of trade was usually restricted within the district of Suhu, mainly towns of Hanah and Yabiliya [Joannés 1992: p. 34]. According to Joannés, the town of Yabiliya was one of the centres in the district, because most of the letters found at Haradum were from Yabiliya [Joannés *et al.* 1983: p. 141]. The ancient name of 'Usiyeh is not known, but it has been assumed that Yabiliya was near 'Usiyeh. The distribution of the Circular Impressed Ware may probably correspond to the sphere of usual trade.

The Circular Impressed Ware must have been locally manufactured, within the district of Suhu. It was not exported to areas outside the district, and was used for a short period, *i.e.* during the Old Babylonian period, and the time span of the use is probably 150 years or 200 years.

List of Figures

Fig. 1: Types A (1) and B (2–4) of the Circular Impressed Ware from Area A of 'Usiyeh (Scale: 1/4).

1. 'Usiyeh UP-125 (P145); Room W and C-XIII-①; sand and much straw temper; reddish (both surfaces: creamy); rim diameter: 23.5cm.
2. 'Usiyeh UP-153 (P423); E-XII-②; sand and much straw temper; greenish.
3. 'Usiyeh UP-152 (P424); D-XI-①; sand and much straw temper; light greenish; rim diameter: about 40cm.
4. 'Usiyeh UP-151 (P422); C-XII-①; sand and much straw temper; reddish pink; rim diameter: about 50cm.

Fig. 2: Type C-1 of the Circular Impressed Ware (Scale: 1 and 2: 1/6; 3–6: 1/4).

1. Haradum, Level 3C (after Kepinski-Lecomte 1992: Fig. 72-1).
2. Haradum, Level 3C (after Kepinski-Lecomte 1992: Fig. 72-2).
3. 'Usiyeh UP-142 (P409); Trench 4-①; fine sand and much straw temper; reddish pink; rim diameter: about 23cm.
4. 'Usiyeh UP-134 (P403); Room S-④; sand and straw temper; light brownish buff; rim diameter: about 33cm.
5. 'Usiyeh UP-135 (P410); D-XII-②; sand and much straw temper; reddish pink; rim diameter: about 33cm.
6. 'Usiyeh UP-82 (P401); E-XII-② above D3; sand and straw temper; reddish (black wash on both surfaces); rim diameter: about 22cm.

Fig. 3: Types C-2 (1–5) and C-3 (6–9) of the Circular Impressed Ware (Scale: 1 and 2: 1/6; 3–9: 1/4).

1. Haradum, Level 3C (after Kepinski-Lecomte 1992: Fig. 71-2).
2. Haradum, Level 3C (after Kepinski-Lecomte 1992: Fig. 73-1).
3. 'Usiyeh UP-136 (P404); E-XI-①; sand and straw temper; reddish pink (both surfaces: creamy); rim diameter: about 42.5cm.
4. 'Usiyeh UP-140 (P419); E-XIII-②; sand and much straw temper; greenish; rim diameter: about 42.5cm.
5. 'Usiyeh UP-144 (P432); C-XI-①; fine sand and much straw temper; greenish.
6. 'Usiyeh UP-51 (P415); F-XII-②; sand and straw temper; greenish buff (black wash on both surfaces); rim diameter: about 48.5cm.
7. 'Usiyeh UP-80 (P414); D-XI-①; sand and much straw temper; light greenish (black wash on both surfaces); rim diameter: about 48.5cm.
8. 'Usiyeh UP-81(P412); Room M-④; sand and straw temper; light greenish to buff.
9. 'Usiyeh UP-79 (P413); D-XI-①; sand and much straw temper; greenish (trace of black wash on both surfaces); rim diameter: about 81cm.

Fig. 4: Type C of the Circular Impressed Ware (Scale: 1/4).

1. 'Usiyeh UP-132 (P402); surface collection; fine sand and much small straw temper; reddish (both surfaces: creamy); rim diameter: about 40cm.
2. 'Usiyeh UP-137 (P406); F-XII-②; sand and straw temper; greenish; rim diameter: about 36cm.
3. 'Usiyeh UP-150 (P420); F-XII-①; sand and much straw temper; reddish pink; rim diameter: about 33.6cm.
4. 'Usiyeh UP-138 (P405); F-XII-①; sand and much straw temper; reddish pink; rim diameter: about 42cm.
5. 'Usiyeh UP-133 (P407); E-XIII-①; sand and straw temper; reddish; rim diameter: about 36cm.
6. 'Usiyeh UP-139 (P421); Trench 4-①; sand and much straw temper; reddish pink; rim diameter: about 33.5cm.
7. 'Usiyeh UP-84 (P408); C-XIII-①; much sand and straw temper; light greenish; rim diameter: about 43cm.
8. 'Usiyeh UP-113 (P425); C-XVI-① and F-XIV-①; sand and much straw temper; greenish; rim diameter: about 29.4cm.
9. 'Usiyeh UP-83 (P411); H-XVII-①; fine sand and straw temper; reddish pink (ex. surface: buff).
10. Haradum, Level 3B2 (after Kepinski-Lecomte 1992: Fig. 142-6).

Fig. 5: Type D of the Circular Impressed Ware (1 and 2) and Cordeye Lugs (3 and 4) (Scale: 1/4).

1. Haradum, Level 3D (after Kepinski-Lecomte 1992: Fig. 71-1).
2. 'Usiyeh UP-120 (P417); I-XV-①; sand and much straw temper; brownish (black wash on both surfaces); rim diameter: about 52cm.
3. 'Usiyeh UP-122 (P418); F-XII west-②; sand and straw temper; light greenish (black wash on both surfaces).
4. 'Usiyeh UP-123 (P416); E-XII-②; sand and straw temper; reddish to greenish.

Fig. 6: Type E of the Circular Impressed Ware (Scale: 1/4).

1. 'Usiyeh UP-50 (P766); D-XII-②, E-XII-①, E-XII-②, E-XII-③, and Room E –1.2m; fine sand and much straw temper; reddish (ex: partly light greenish); rim diameter: 16.2cm; I.M. 52.
2. 'Usiyeh UP-552 (P787); F-XI-①; fine sand and much straw temper; greenish.
3. 'Usiyeh UP-579 (P765); Room S-④; much sand, much straw and stones temper; reddish (both surfaces: light greenish); rim diameter: about 45cm.
4. 'Usiyeh UP-554 (P770); D-XI-①; fine sand and much straw temper; greenish.
5. 'Usiyeh UP-556 (P769); E-XI-② above D3; sand and much straw temper; brownish.
6. 'Usiyeh UP-557 (P771); F-XII-②; fine sand and much straw temper; reddish pink.
7. 'Usiyeh UP-553 (P768); E-XI-①; fine sand and much straw temper; greenish to buff.
8. 'Usiyeh (P772); surface collection; fine sand and much straw temper; reddish pink to light greenish.
9. 'Usiyeh UP-571 (P761); surface collection; fine sand and much straw temper; greenish; rim diameter: about 20cm.
10. Haradum, Level 3B1 (after Kepinski-Lecomte 1992: Fig. 142-12).

Fig. 7: Fragments of the Circular Impressed Ware (Scale: 1/4).

1. 'Usiyeh UP-148 (P428); E-XI-①; sand and straw temper; reddish pink (both surfaces: light greenish).
2. 'Usiyeh UP-146 (P430); E-XIII-①; sand and much straw temper; greenish.
3. 'Usiyeh UP-147 (P427); Trench 1-①; sand and straw temper; reddish pink to light brownish buff.
4. 'Usiyeh UP-145 (P426); Trench 1-①; sand and much straw temper; light brownish buff.
5. 'Usiyeh UP-149 (P429); E-XI-①; sand and straw temper; reddish to greenish.
6. 'Usiyeh UP-465 (P361); F-XII-②; fine sand and straw temper; reddish pink.
7. 'Usiyeh UP-555 (P362); E-XII-①; fine sand and straw temper; reddish pink (ex. surface: light greenish).
8. Haradum, Level 3D (after Kepinski-Lecomte 1992: Fig. 142-2).
9. 'Usiyeh UP-141 (P431) Forecourt Doorway-⑤; fine sand and much straw temper; reddish pink.
10. 'Usiyeh UP-143 (P433); Room N-④; fine sand and much straw temper; greenish.
11. 'Usiyeh UP-438 (P363); C-XVII-①; fine sand and much straw temper; greenish.

Bibliography

Delougaz, P.
1952 *Pottery from the Diyala Region*, Oriental Institute Publications 58, Chicago.

Elliot, H.W.
1939 Appendix H: The Pottery from Kudish Saghir, in Starr 1939: *Nuzi: Report on the Excavations at Yorgan Tepe Near Kirkuk, Iraq, Volume I: Text*, pp. 608–615, Cambridge and Massachusetts.

Fujii, H. and Matsumoto, K.
1987 'Ūsiya Area A, *Archiv für Orientforschung* 34, pp. 166–173.

Fujii, H., Okada, Y., Matsumoto, K., Oguchi, H., Yagi, K. and Numoto, H.
1984/85 Preliminary Report on the Excavations at Area A and Area B of 'Usiyeh, *al-Rāfidān* 5/6, pp. 111–150 (in Japanese).
(in press) Preliminary Report of Excavations at Area A and Area B in 'Usiyeh Site (forthcoming volume of *Sumer*).

al-Gailani, Lamia
1965 Tell edh-Dhiba'i, *Sumer* 21, pp. 33–40.

Joannès, F., Kepinski, C. and Lecomte, O.
1983 Présence babylonienne dans le pays de Suhu au XVIIe siécle av. J.-C.: L'exemple de Kherbet ed Diniye, Iraq, *Revue d'assyriologie d'archéologie orientale* 77, pp. 119–142.
1992 Histoire de Harâdum à l'époque Paléo-Babylonienne, in Kepinski-Lecomte 1992: *Haradum I, Une ville nouvelle sur le Moyen-Euphrate (XVIIIe-XVIIe siècles av. J.-C)*, pp. 30–36, Paris.

Kepinski, Christine
1988 Note d'anthropologie religieuse: a propos de différents types de supports en céramique, *Revue d'assyriologie d'archéologie orientale* 82-1, pp. 47–57.

Kepinski-Lecomte, Christine
1992 *Haradum I, Une ville nouvellè sur le Moyen-Euphrate (XVIIIe-XVIIe siècles av. J.-C)*, Paris.

Kepinski, Christine and Lecomte, Olivier
1985a Mari et Haradum, *Mari Annales de Recherches Interdisciplinaires* 4, pp. 615–621.
1985b Haradum/Harada, une forteresse sur l'Euphrate, *Archeologia* 205, pp. 46–55.

Okada, Yasuyoshi (Abu Thor Party of Kokushikan Archaeological Expedition in Iraq)
1982/83 Some Notes on the Excavations at Tell Abu Thor, Iraq, 1981, *al-Rāfidān* Vol. 3/4, pp. 5–26 (in Japanese).

Parrot, André
1956 *Mission Archéologique de Mari, Tome I: Le temple d'Ishtar*, Paris.

Starr, Richard F.S.
1937 *Nuzi: Report on the Excavations at Yorgan Tepe Near Kirkuk, Iraq, Volume II: Plates and Plans*, Cambridge and Massachusetts.
1939 *Nuzi: Report on the Excavations at Yorgan Tepe Near Kirkuk, Iraq, Volume I: Text*, Cambridge and Massachusetts.

Vallet, Régis
1992 Les remparts d'Haradum, in Kepinski-Lecomte 1992: *Haradum I, Une ville nouvelle sur le Moyen-Euphrate (XVIIIe-XVIIe siècles av. J.-C)*, pp. 15–25, Paris.

HURRIANS AND INDO-EUROPEANS IN THEIR HISTORICAL AND ARCHAEOLOGICAL CONTEXT

Charles BURNEY*

It is a pleasure to have been invited to contribute to this Festschrift for Professor Hideo Fujii. I wish him many more years' fruitful work, but must apologize for reintroducing well-worn topics. I do so with the intention of inserting some viewpoints of my own. Naturally only a selection of the published literature on the Proto-Indo-Europeans and early Hurrians can be cited for want of space. My long-standing interest in the latter is well attested (Burney 1958, 1971, 1989a, 1989b, 1994 and in press).

The search for the precise identity of ancient populations, not least in the Near East, continues to engross numerous specialists, while alarming those on the periphery by the complexity of the many questions raised. The disciplines of comparative linguistics, philology, historical analysis, anthropology, palaeoecology and practical archaeology all have their roles. Grasp of the archaeological publications and first-hand knowledge of the terrain in question are also desirable. If it were possible to find anyone with so wide a range of expertise, the approaches to all ancient ethnic groups would be better directed ! Coordination instead of fragmentation of effort could then be achieved.

The limits to individual grasp of the multifarious problems surrounding both Indo-Europeans and Hurrians need not be disastrous, provided always that there is a sense of balance, a willingness to listen and a generous measure of common sense. Alas, this last is not always to be found in academic publications. Some of the more dogmatic or fanciful approaches will inevitably be alluded to in this discussion.

Dearth of relevant data remains a problem, although much recent research in different disciplines has been devoted to the Proto-Indo-Europeans and their descendants. Useful overviews have appeared on the early Indo-Europeans (Mallory 1973, 1989; Anthony 1991), as well as a concise but masterly work on the Hurrians (Wilhelm 1989). Yet even these are not without shortcomings.

Linguists, philologists, historians, anthropologists, palaeoecologists and archaeologists all have their own theories or models, their own approaches, special interests, prejudices and (dare one say ?) their own idiosyncrasies. As an archaeologist the writer must declare an interest, while making every effort to achieve balance. This seems appropriate now that various tentative ventures have been launched towards a greater mutual understanding between the disciplines involved (Markey and Greppin 1990).

The archaeologists have one advantage, the imperative to keep their noses close to the ground, both on excavations and during field surveys. The Japanese excavations at Tell Jigan and other sites in the Eski Mosul (Saddam Dam) area of northern Iraq are an exemplar of conscientious devotion to their trenches and to the pottery and other finds therefrom (Fujii *et al.* 1987). Intensive surveys have to be carried out with comparable discipline. On the wider-ranging archaeological reconnaissance, however, the sherd-gathering student is liable to be greeted as a "pottery engineer". Hard-won familiarity with regional environment, at least in the more favourable months, is a positive gain. On the negative side must be set the widely held dogma, elevated by some archaeologists almost to the level of a theological doctrine, to the effect that indigenous development was the norm in prehistory; and that migrations can be all but ruled out as a stimulus to cultural change, the extreme position in the argument. It is undeniable that earlier emphasis on diffusion (Childe 1952) required drastic modification, being in any case based on far fewer data than those available today. Yet however questionable it may be, hyper-diffusionism

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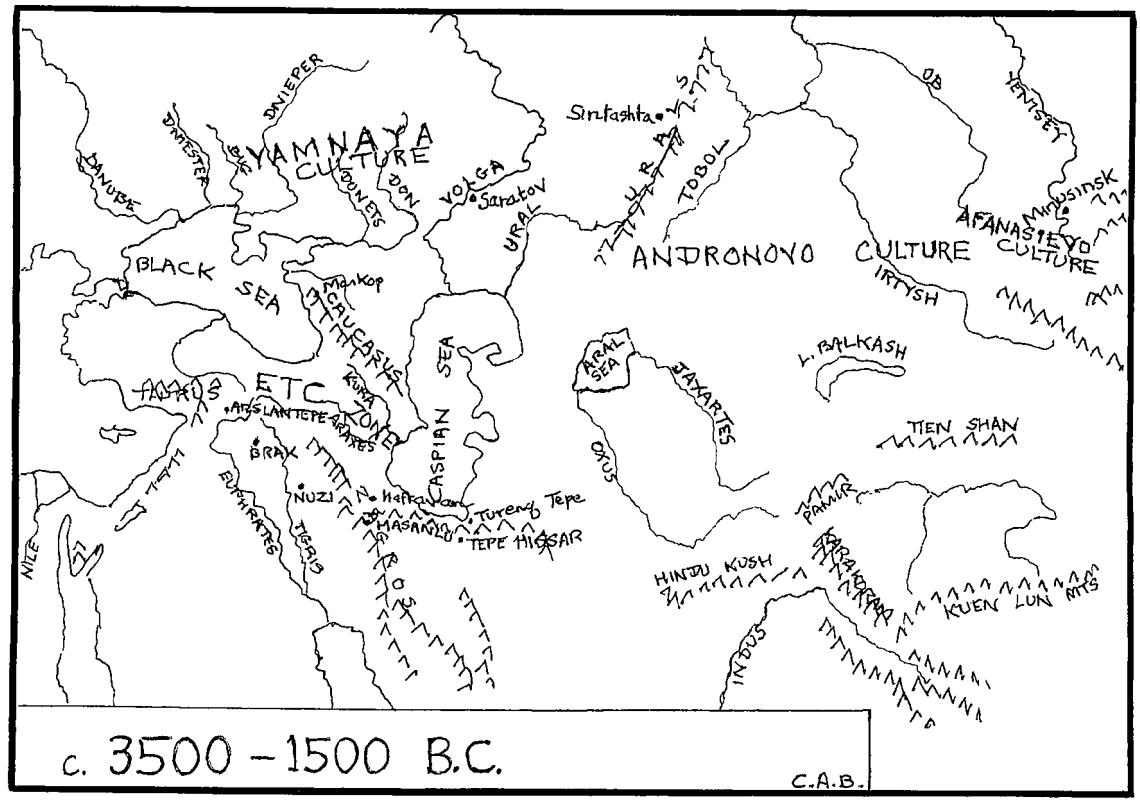

Fig. 1 Proto-Indo-European and Hurrian habitats.

is not dead, at least not in the context of placing the Proto-Indo-European homeland around Çatal Hüyük, in the seventh millennium BC (Renfrew 1987: 75–98). Common sense and a recognition of the limits to knowledge of preliterate societies are essential. Without historical records, however fragmentary or biassed, how much would we know of the so-called barbarian invasions which led to the downfall of the Roman empire in the west, still less of Theodoric, Genseric or Attila (Gibbon 1776–87)? Destructions abound in the archaeological record, but how much evidence is there to identify individual tribes, least of all in that age of rapid movements from southern Russia to north Africa ?

In contrast to inbuilt archaeological parochialism, linguists have long since held one advantage, a willingness or even a zeal to take the panoramic view, continental or even at times worldwide, in their quest for comparative data. In this respect they are closer than the archaeologists to the traditional allies of the latter, the anthropologists. This wider view is easily comprehensible in Indo-Europeanists, seeing how widespread the use Indo-European languages has become across the globe. There is a danger, however, that tiresome details of space and time may be brushed aside in pursuit of the quarry, often the product of etymological reconstruction and indicated in the literature by an asterisk. Some use of such reconstructions will be made below, but with due caution. The most glaring distortion of linguistic scholarship was seen earlier this century, in the uncritical exaltation of the Aryans, the effects of which were lifted only two or three decades ago (Polikov 1974; compare Childe 1926). Nineteenth-century outlooks have been a long time dying. Arrows have sometimes been drawn on maps with more imagination than material basis (Renfrew 1987: 206).

Linguistic palaeontology is commonly regarded with some suspicion by archaeologists, when they note how much can be built on all too slim foundations, in a manner admittedly not altogether different from the model-building beloved of prehistorians. To be discounted are efforts to reconstruct the sounds made when men and women opened their mouths in (say) the third or fourth millennium BC, i.e.

glottochronology, now widely though not universally discredited (Gamkrelidze and Ivanov 1984). This must especially be so when there are hints of what may be called archaeo-nationalism, the quest by a contemporary people for distant ancestral roots: the smaller the people, the more they are prone to this malady. Linguistic palaeontology — here under scrutiny in the context of the Proto-Indo-European homeland, environment and society — can, however, be of considerable value to the archaeologist, even if any non-linguist is obliged to take it for the most part on trust. For many years Indo-Europeanists have been endeavouring to reconstruct the natural environment surrounding the Proto-Indo-European population, essentially to determine at least the general location of the homeland, the *Urheimat*, so long the focus of debate. Trees (Friedrich 1970), wild mammals (Mallory 1982), fish (Mallory 1984) and birds (Mallory 1991) are among the topics of research, the best of which is directed to securing the foundations of the imposing edifice so painstakingly erected over many decades by specialists from numerous countries. A proportion of their labours appears from time to time in conference proceedings (e.g. Polomé and Winter 1992) or in successive volumes of the *Journal of Indo-European Studies*. Archaeologists and historians, however objective their assessments must be, ignore such conclusions at their peril.

What of the cuneiformists and historians of the ancient Near East ? Their scholarly studies, like those of the linguists, stretch back over a longer time-span than most relevant archaeological research. Consequently there lingers on a tendency to discount the existence of ethnic groups not directly attested in surviving written sources. Except for southern Mesopotamia and Egypt and a few other sources such as Ebla, there is little that can be termed a historical record before the second millennium BC.

The Hurrians

Hurrian words and names have been recognized in documents of the Akkadian period from the Khabur region, from Gasur and from Nippur, though suggesting no more than a limited infiltration at this early stage (Wilhelm 1989: 7–9; Milano 1991). While a Hurrian presence in northern Mesopotamia and Syria during the later third millennium BC is perforce agreed, there remains a reluctance to concede the case for a Hurrian homeland coterminous with the extensive Early Trans-Caucasian cultural zone (Burney and Lang 1971: 47–51). There is now some support for this theory (Diakonov 1990: 62–3) and a willingness to postulate a Proto-Hurrian homeland (Wilhelm 1989: 6). This nomenclature is logical, given the wide agreement that Hurrian and Urartian were linguistically related through a common Proto-Hurro-Urartian ancestor (Diakonov 1971), with possible East Caucasian affinities (Diakonov and Starostin 1986).

The Hurrians have been largely identified with Mitanni, overlooking the fact that this was a political rather than an ethnic entity (Drower 1973), the same authority mentioning a movement from eastern Anatolia (Drower 1973: 417). The vision of skilled horsemen, implied in the famous Kikulli text from Boğazköy, and of the *maryannu* as the earliest manifestation of knightly prowess has diverted attention disproportionately to the role of Indo-Aryans in the Near East in the mid-second millennium BC. The question of how these charioteers and cavalry appeared for a time in the forefront of Near Eastern power politics has not been adequately addressed. For any solution to be attempted, it is essential to look back much further, even to the fourth millennium BC.

This assertion runs counter to the traditional opinion of the historians, based on the cuneiform sources, with a hesitant approach to ethnic identification in the absence of onomastic evidence, perhaps the surest indication of ethnicity. Unfortunately for its ready recognition, the Hurrian contribution to the varied cultural landscape of the ancient Near East became obscured by acculturation: the Hurrians became in effect the apostles of Sumero-Akkadian learning in the lands to the west and north-west, culminating in their role in the civilization of the Hittite New Kingdom in the fourteenth and thirteenth centuries BC.

Yet had the direct ancestors of the historical Hurrians not played a part in the Near East in earlier

generations, specifically in the third millennium BC ? Radiocarbon dating suggests, contrary to earlier absolute chronologies (Burney and Lang 1971: 46), that the relevant context in terms of material culture can be traced back as early as c.3600/3500 BC (Easton 1976; Sagona 1984: 122–7 and Table 4). This higher dating, as argued below, will prove of wider significance than might have been expected.

In any exposition of the Early Trans-Caucasian (ETC) role in the Near East it is important to maintain geographical precision (Fig. 1). Even one very recent map (Carter and Parker 1995: 97) implies territorial limits for this remarkably extensive cultural zone for some reason excluding Trans-Caucasia and north-western Iran. There has even reappeared the term "Karaz culture", in vogue when only a thin scatter of ETC sites had been recognized (Marro 1993: 58–61). Variants in buildings and pottery, while undeniable, should not blind us to the overall unity of the ETC cultural zone over many centuries, commonly distinguished as the ETC I and ETC II periods. No doubt a number of factors brought about the breakdown of this homogeneous cultural tradition, in the third and final period, ETC III (c.2600-2000 BC). Innovations are especially apparent in the Malatya-Elaziğ region of the upper Euphrates basin, where a distinctive painted pottery developed, recognized in its true context a generation ago (Burney 1958: 169–71, 202–8). That context derives from ETC roots, evident in the ceramic forms, cross-fertilized with painted pottery traditions at home in north Syria and exemplified in Alalakh XVI-VIII (Burney 1958: 208). Suggestions of a purely localized culture (Marro 1993: 61–2) or of ethnic affinities with central Anatolia, specifically with Hattians and Proto-Hittites, on the basis of ceramic decorative motifs (Carter and Parker 1995: 102–3) are surely rather far-fetched. Reference to motifs on ETC pottery from Trans-Caucasia further stretches credulity. Such arguments smack of "iconograohic palaeontology": sometimes justifiable, they require supporting evidence to become readily acceptable.

Faint hints of early Hurrians lurk in linguistic data: thus the Sumerian word *ta/ibira*, meaning 'copper-worker', can with certainty be attributed to a Hurrian derivation (Wilhelm 1989: 8–9). Copper-working in the Malatya-Elaziğ region dates back well before the ETC III period, especially at Norşuntepe (Zwicker 1980) but also at Tepecik and Arslantepe (Palmieri, A. M., Sertok and Chernykh 1993). The abundant evidence of a Sumerian presence along the Euphrates on either side of the modern Turco-Syrian frontier (summarized in Roaf 1990: 63–7), as well as the indications of relations with the Mesopotamian world in the Late Uruk period further up the valley at Arslantepe (Frangipane and Palmieri 1983), suggest, with the metallurgical evidence, a favourable cultural climate for the first entrée of the Hurrian highlanders from their ETC homeland into the lowlands. Therefore economic stimuli would have been predominant, well before the advent of chariotry and cavalry, as in the days of Mitanni. Thus can be explained the distinctive character of the ETC III culture of the Malatya-Elaziğ region, a constant factor being the abundant nearby source of copper in Ergani Maden. Hurrians may well have penetrated widely through northern Syria and Mesopotamia by virtue of their skills as coppersmiths and very probably also as traders. Thus a favourable climate was created, with appropriate incentives, for the later mass movements of Hurrians into the lowlands. Where such favourable conditions for industrial production and trade did not exist, as in the greater part of the rest of the wide ETC cultural zone, material culture suggests a conservative society, changing but slowly. In some areas it survived perhaps until the mid-second millennium BC (Burney and Lang 1971: 47), as also indicated by recent and ongoing excavations at Sos Hüyük, east of Erzurum (Sagona 1994).

The penetration of ETC elements into the Elaziğ area in the ETC I period and then in ETC II across the Euphrates River into the area of Malatya was the result, it seems, of a powerful centrifugal force behind the relatively rapid expansion of the ETC population from the general region of Trans-Caucasia. Once settled in the Elaziğ-Malatya region, the economic influences outlined above came into operation on the newcomers. An ample range of excavated material now demonstrates the character of this region in the fourth and third millennia BC (Conti and Persiani 1993). There is a reasonable possibility that the ETC population through its highland homeland, from the Caucasus to the Urmia basin and to Malatya, may have evolved a hierarchical or ranked society, although the available archaeological evidence

can hardly be said to include symbolic indications of rank or authority (Mallory 1989: 233). Of local cults there is some evidence, most vividly at Pulur (Sakyol) (Koşay 1976), implying though scarcely proving a degree of social cohesion. Reference to Hurrian communities in north Syria and Mesopotamia shows the juxtaposition of ruler and city council. In the highland zone no doubt a less sophisticated familial structure persisted, based on the extended family and in some cases controlling large territories; but the evidence is of later date, from the Urartian written records (Diakonov 1984: 43). The growth of extended families may be postulated from the increasing size, through successive occupation levels, of the ETC II round houses of Yanik Tepe, in the northern Urmia basin (Burney 1961, 1962, 1964). Country estates close to the royal dynasty of Urartu are mentioned in Sargon II's account of his eighth campaign (714 BC) (Luckenbill 1927: 91).

Archaeological indications of the Hurrian impact on the lowlands are of course associated with the emergence of Mitanni. Recent seasons of excavations at Tell Brak remove any possibility that the Hurrian presence was negligible in cultural terms. On top of the ruins of the major temple was built a palace, whose private quarters were reached by staircases to an upper storey, as at Alalakh, representing a departure from previous design. Traces of inlaid glass, with the historical record, indicate a date close to the mid-sixteenth century BC. By then Parattarna, king of Mitanni, controlled the whole territory from Kizzuwatna and Alalakh near the Mediterranean to Nuzi in the east. The desecration of the temple and secularization of its site surely mark an alien intrusion, not the work of a small band of horsemen (Oates 1987), While there may not be agreement on the historical identification of Tell Brak (Oates 1987; Matthews and Eidem 1993), it was clearly a city of major economic if not also political importance.

The very name 'Hurrian' may give clues to the origins of this ethnic group. Just as there are hints of Indo-European origins near the Caspian, in a land where the sun rises from the sea (Steiner 1990), so it is suggested that the term *hurri-le* signifies 'easterners' or 'north-easterners' and thus the homeland whence they expanded into upper Mesopotamia and north Syria (Diakonov 1990: 62). This term may be compared with Hurrian *hurri* ('morning').

An archaeological pointer to links between the Urmia basin and the Khabur valley — however cautiously such parallels should be treated — is to be seen in painted sherds of a figure with legs splayed apart, perhaps a dancer, and wearing a fringed kilt or skirt, occurring at Haftavan VI (Edwards 1983: 351e) and at Tell Brak level 3 (Stein 1984: Plate XI, 7). With a date for the beginning of Level 3 at Brak from c.1550 BC, the association with the rise of Mitanni is evident; but it comes rather too late for the migration of Hurrian newcomers from the highlands to the east or north-east.

On linguistic and historical grounds a migration from Iranian Azerbaijan has been proposed and dated c.1700 BC (Diakonov 1990: 64). An earlier movement out of the Urmia basin, so far indistinguishable likewise in the archaeological record, has boldly been proposed as the earliest historically attested movement of Indo-Europeans into the Near Eastern lowlands. These were the Guti, who overran the Akkadian state, and who are here identified with the Tukres and the historical Kuchi-Tocharians far to the east (Henning 1978). This posthumously published idea, however, has been vigorously attacked on the ground of the time-span of nearly three millennia (Zimmer 1990a: 319), with preference for a Trans-Caucasian homeland for the Guti/Quti (Diakonov 1990: 63). The Hurrian kingdom established in the mid-second millennium BC was officially named Hanigalbat, surviving in name into the Late Assyrian period: it was the dynasty which was called Mitanni/Maitani. It may be significant that the Urmia basin was later called Matieni, forming part of the eighteenth satrapy in the reorganization of the Persian empire by Darius I (Burney and Lang 1971: 180).

Military movements are notoriously difficult to trace in the archaeological record without benefit of pictorial or written documentation, as in the Late Assyrian palaces, or without a chain of destructions such as those left by Genghis Khan. The military presence in the archaeological record is overwhelmingly that of the defensive rather than the offensive. It seems that the *maryannu/marianna*

charioteers of Mitanni were neither an aristocratic elite nor an Indo-Aryan caste but exclusively Hurrian (Diakonov 1990: 64). Etymologically this term can fairly be described as Eastern Caucasian, a hint of the possible geographical antecedents of these horsemen, perhaps from much the same quarter as the Guti before them. A word for "watch soldier", possibly of Hurrian origin, as well as Urartian, though found also in Late Akkadian, in Ugaritic and especially in Assyrian, is *huradi*. This may be associated with the stem *hur*, "belonging to the semantic sphere of war" and "quite conceivable as the self-description of a race" (Wilhelm 1989: 1). It could alternatively have been a pejorative term, as with the Habiru 'mercenaries', 'tinkers' etc. rather than a precise ethnic group. Unfortunately the Turkic *hur* ('free') can hardly be related. One fact seems certain: the dominance of the Hurrians, in the lands which became Mitanni, in chariotry, until it was introduced effectively to other lands, notably the Levant and New Kingdom Egypt. To what degree chariotry was a Hurrian invention in the Near East can be answered only with reference to Indo-Europeans, discussed below.

The more peaceful accomplishments of the Hurrians — in literature, music and their religious manifestations — have long been recognized, from central Anatolia to upper Mesopotamia. These were the Hurrians of the diaspora, who had undergone a long process of acculturation. The Hurrians who had remained behind in their highland homeland, the ETC cultural zone, stayed largely untouched by the urban world of the southern plains. By the mid-second millennium BC, however, new elements in the material culture were appearing (Çilingiroğlu 1984), including painted pottery from north-western Iran (Edwards 1986); but there is little or no trace of settlements in the second millennium BC in wide tracts of eastern Anatolia. In Trans-Caucasia too data are largely from tombs (Burney and Lang 1971: 86–110). Two sectors, however, of the former ETC zone — the Urmia basin and the Elazığ-Malatya region — were less isolated, enjoying continuity of settlement and closer contact with Mesopotamia and Syria, especially along the upper Euphrates.

The complex iconography of the famous gold bowl of Hasanlu (Winter, I. J. 1989) has long been associated with the Hurrian myth of Kumarbi, itself perhaps implying unsettled conditions around the end of the second millennium BC, if not earlier. While the ceramic evidence seems to point to an Iranian presence in north-western Iran at that time (Iron II period), the gold bowl is unequivocally Hurrian or Hurro-Mannaean in inspiration. Myth and cult, pantheon and family guardians alike survived through generations of obscurity. But it was language which indubitably survived, as proved by the numerous Urartian inscriptions. The Urartian language, it is generally agreed, had evolved from a Hurro-Urartian substratum, which may well have been the language of the ETC population in the fourth and third millennia BC. As for the gold bowl of Hasanlu, it reflects the context of Hurrian society before the expansion into the lowlands, in the era of the ETC Hurrian homeland (Stein 1989: 84).

Religion and funerary customs are commonly supposed to preserve ancestral memories and traditions. Uch-Tepe and other early burial mounds (kurgans) occur in areas where all known evidence points to a non-Indo-European population, almost certainly Hurrian in large part, with East Caucasian elements (Mallory 1989: 29–30, 231–3). The Hurrian sun-god Shimake was etymologically related to the Urartian sun-god Shivini, though less exalted in rank. The Hurrian moon-god Kushuh has been associated with the Proto-Hattian moon-god Kasku, a relationship suggesting very early linguistic contacts between Hattians and Hurrians, thus between central and eastern Anatolia (Wilhelm 1989: 53). Such contacts must have occurred by the later fourth millennium BC, after the initial expansion of the ETC cultural zone (Sagona 1984: 138–9). Given the pastoralist and semi-nomadic character of much of ETC society and the difficulty of detecting settlement remains in areas then largely forest-covered and probably building mainly in timber, the absence of supporting archaeological evidence is only to be expected.

The latter end of Hurro-Urartian history is bound up with problems related to the early Armenians, an Indo-European people who penetrated Urartu during the later seventh century BC from the west (Herodotus VII, 73; Strabo XI, 14, 12). Linguistics have been deployed to refute the writer's suggestion of a largely Hurrian ancestry for the Armenians, unconnected with their adoption of an Indo-European

language related to Old Phrygian (Burney and Lang 1971: 177–9; Greppin n.d.). The arguments around the theme of race versus language are interminable. An alternative explanation could be that small bands of Armenians succeeded, with the decline and fall of Urartu, in gaining control of much of eastern Anatolia, including the most productive pastures; but that these newcomers were few, and became absorbed into the indigenous Hurro-Urartian population, while imposing their language on the majority. The scarcity of Hurro-Urartian survivals in the Armenian language seems to prove nothing (Diakonov 1985). How many linguistic survivals were absorbed into Turkish with the Seljuk conquest of Anatolia ? In Anglo-Norman England, however, the conquered native population retained much of its cultural identity through the preservation of its language, though subject to radical evolution and absorption of much of the vocabulary of the Norman ruling class. Three centuries, however, were to pass before the preservation of the English language was assured. In human history and prehistory tribal movements, massacres and political instability have seldom allowed so long a period for cultural consolidation.

The Indo-Europeans

The Indo-Europeans and their Proto-Indo-European (PIE) ancestors may at first be considered a wholly new theme, alien to and divorced from study of non-Indo-European populations in the ancient Near East, whether Sumerians, Elamites, Semites or indeed Hurrians. True it is that European prehistory may be envisaged as extending to the Caucasus, though since the days of Childe its eastern frontier has retreated westwards towards the Dnieper. But the Caucasus has never been so formidable a natural barrier that contacts and even major movements from north to south, from the steppes of the Pontic-Caspian zone to the highlands of Anatolia and Iran, can be discounted. As indicated above, any frontier is as much in the minds of modern-day scholars as in the realities of the past millennia.

The problem of the PIE homeland cannot be set aside without comment, for on its solution depends much of the interpretation of later developments involving Indo-Europeans, from the Indus valley to Anatolia and to the Caspian steppes and beyond (Fig. 1). A fairly recent discussion (Anthony 1991) puts matters in perspective, in a manner uncluttered by nationalistic or academic prejudices or obsessions. Anthony stresses several aspects: the great preponderance of PIE linguistic links with Finno-Ugric over those with Semitic; the archaeological pointers to PIE associations with the Andronovo culture in the east, the situation in the west being less clear for the period preceding dispersal from the PIE homeland; the limits of the homeland; and the linguistic evidence for a homeland in the temperate zone. All these factors indicate a PIE homeland north of the Caucasus, most probably between the lower Volga and the Dnieper basins.

T.V. Gamkrelidze, in contrast, puts the PIE homeland "somewhere in the broad area extending from the Balkans to northern Mesopotamia and the Iranian plateau... in the fifth to fourth millennia BC" (Gamkrelidze 1990: 6). He goes on to place the PIE homeland in "a region contained within eastern Anatolia, the southern Caucasus and northern Mesopotamia in the fourth to fifth millennia BC" (Gamkrelidze 1990: 10). While welcoming archaeological support from an unexpected quarter (Renfrew 1987), he flies in the face of the archaeological data when they do not agree with his linguistic analysis. He skirts the issue of the archaeological evidence. At one point the Proto-Indo-Europeans are peaceful agriculturalists; the next moment they are rapidly mobile charioteers, whose migrations, complete with horses and chariots, began as early as the end of the fourth millennium BC (Gamkrelidze 1990: 12). This hypothesis could be said to fit well alongside the late Roman Ghirshman's reconstruction of pre-Iranian movements (Ghirshman 1977). References to Proto-Kartvelian parallels imply a quest by Gamkrelidze for his own prehistoric ancestors. Diakonov has commented ironically that "the whole Ivanov-Gamkrelidze theory shows a picture of Indo-European languages moving in a giant rotating movement with immovable Georgian as the axis of the giant wheel" (Diakonov 1990: 61). The Armenians and even the Azerbaijanis demonstrate comparable approaches.

Greek migration westwards from Anatolia to the Aegean, suggested by Gamkrelidze, fits in with

James Mellaart's ideas of a generation ago, e.g. on Minyan ware (Mellaart 1958). At the end of his Bellagio symposium paper (Gamkrelidze 1990: 14) he throws in the theory that "the area north of the Black Sea and the Volga steppes may be considered the basic common (although secondary) homeland for the "Ancient European" languages.." The emphasis is on 'secondary', with an olive branch to Gimbutas in a reference to this as "the homeland of the western group of Indo-European languages." An alternative PIE homeland in the Balkans, though cogently argued, seems less probable (Diakonov 1985a). Perhaps the strongest archaeological hint of Indo-European origins in Gamkrelidze's secondary homeland, the Pontic-Caspian zone, lies in the earliest known domestication of the horse, located more precisely along the Dnieper (Anthony 1986; Anthony and Brown 1991) or at least within the PIE homeland between the Dnieper and the lower Volga.

One of the recurrent lines of linguistic argument revolves round the great length of time needed for the breakdown of the PIE proto-language, initially in the west into the Anatolian dialects first evident in the *karum* of Kanesh and in the east into Tocharian. The assumption of a measurable rate of change appears to be fundamental to many a palaeo-linguistic model. But may a non-linguist be so bold as to question this ? The writer finds himself for once in agreement with Renfrew on a crucial point (Renfrew 1990: 19). Surely in preliterate societies and in those with only a very small literate "cleracy" linguistic changes can develop far more rapidly, when there is no strict canon of speech, written expression or style ? One could cite the example of early English, of the degree of change from Chaucer to Shakespeare in two hundred years, compared with the four centuries or so since Shakespeare. The implication for Anatolia would seem to be that immigration of PIE elements as late as the mid-third millennium BC could have given birth to the Indo-European dialects of the period of the Assyrian colonies. A dating of these movements during the fourth millennium BC, however, seems more probable (Mallory 1989: 263–4; Mellaart 1981; Steiner 1990).

Gamkrelidze's reconstruction of Kartvelian connections with Indo-European languages is not unanimously accepted by linguists (Harris 1990). The whole region of the Caucasus does seem to have been a reservoir of heterogeneous ethno-linguistic groups over many millennia, a phenomenon related to the constant demographic, cultural and military movements through and around this mountain barrier. Hence came ever renewed contacts between the northern and Near Eastern peoples. It is the hint of a relationship between Proto-Kartvelian and Hattian which makes study of the former particularly significant. Such are the clues to population movements in the era of the ETC cultural zone.

Attempts to reconstruct PIE society (Polomé 1992), economy (Diebold 1992) and religion (Dumézil 1958, 1977; Mallory 1989: 128–42) have been too numerous for much discussion here. Some later, regional developments, notably in India and related to a supposed tripartite social structure, have been attributed to the PIE substratum on inadequate evidence (Zimmer 1990a: 313). Life in the open plains of the Pontic-Caspian zone must have accentuated any sense of insecurity: this may explain the pattern of villages, typical of the Kurgan tradition, focussed on a hill fort; it also gives a context to the dichotomy between "inside" and "outside" in assessments of their society by early Indo-Europeans. Security and mutual support were to be found within: outside lay the hostile, limitless world of the plains. The door itself had a symbolism denoting the boundary between these two, a symbolism evidently not unfamiliar to the Hurro-Urartian tradition as expressed in the recessed, rockcut stelae of Urartu (Tarhan and Sevin 1975). The most enduring expression of Indo-European attachment to the security of the interior space was the dominant role of the family, discernible in the etymology of words denoting 'homestead' (Indic *dam*, Italic *domus* etc.). The available evidence for Proto- and early Indo-European religion shows an absence of temples but a tradition of gatherings akin to the Scottish ceilidh, livened by food, drink and music, with recitations. Again there is a parallel with early Hurrian tradition in the ETC cultural zone, with its widespread evidence for a domestic cult of the hearth (Volpe, della 1990: 159–60); and with textual evidence of Hurrian sacrificial practices and anointing of divine statues, with which an instrumental or choral accompaniment was often associated (Wilhelm 1989: 65). Prominent in early Indo-European

ritual was horse sacrifice (Mallory 1981); and the respect for the horse persisted over many millennia, as exemplified by the names of the fifth-century AD Jutish mercenaries Hengist and Horsa ('stallion' and 'horse'), who occupied the south-east corner of the British Isles, which became the kingdom (later county) of Kent.

Whatever may be thought of reconstructions of Neolithic communities as being controlled by governing goddesses and sisterhoods, for which of course there can be no textual proof, it seems undeniable that Neolithic Europe including the Pontic-Caspian zone was relatively peaceful, in the light of the absence of defences for settlements and of weapons in burials (Gimbutas 1990: 284; Meskell 1995). A few suggestions may be ventured on the changes which came about in the Pontic-Caspian zone in the fifth millennium BC. Rapid demographic change is indicated by the spread of uniform burial customs over the Yamnaya (Pit-Grave) cultural zone in the later fourth and earlier third millennium BC (Mallory 1990). Yet the presence in the PIE lexicon of many words for 'high mountains', 'heights', trees, plants and fauna at home in a highland environment cannot be brushed aside. Of considerable significance is the change, apparent from spectographic analyses, in the sources of copper for artifacts occurring in the Pontic-Caspian zone in the Early Eneolithic period, notably in the Sredny Stog culture of the middle Dnieper and Donets basins, and in the Late Eneolithic Yamnaya (Pit-Grave) culture of c.3600–2200 BC (Mallory 1989: 206–15). This change was from Balkan-Danubian copper sources to others in the Caucasus. Technology in the Yamnaya culture was not very sophisticated, with tools for agriculture, hunting and fishing and weapons including flint daggers and arrowheads and stone battle-axes and mace-heads. Here is little support for the linguists' view of an advanced PIE material culture. There is, however, another link with the Caucasus, whence viticulture seems to have been introduced (Diebold 1992: 334).

Whether a hunger for land or the lure of booty or both motivated these highlanders, once they had spilled out on to the northern plains and steppes, they found conditions allowing for rapid movement and expansion. Arable farming was developed where the soils were favourable. Stockbreeding too was in evidence, with linguistic and archaeological data alike indicating a growth in the economic importance of cattle for the PIE population. Pastoralist nomadism and transhumance would have remained significant, as indeed likewise in the Hurrian ETC zone, where stockbreeding seems to have grown in importance towards the end of the fourth millennium BC (Sagona 1993: 453–4). Just when this movement from the north Caucasus foothills occurred, bringing newcomers into the region destined to become their homeland (*Urheimat*), is uncertain: it seems likely that at least the first wave of immigrants arrived in the period of the Sredny Stog culture of the Dnieper-Donets region and its contemporaries, including the Lower Mikhaylovka group, i. e. in a time-span beginning in the mid-fifth millennium BC.

Such is the vast extent of the Pontic-Caspian zone that mastery of agriculture, cattle-breeding and copper-working would not in themselves have enabled the PIE newcomers to overrun the steppes and plains so rapidly and so decisively. One animal, the horse, played a major role, having first been domesticated in the fifth millennium BC (Sredny Stog etc.) and adopted as a mount in the fourth (Anthony 1986). The implications of this innovation for general mobility hardly require emphasis.

Soon after the appearance of horse-riding, a force for cultural unification within the Pontic-Caspian PIE homeland, widespread remains of two-wheeled carts and four-wheeled wagons are found in burials. Such wooden vehicles occur from the mid-fourth millennium BC, both in the TRB (Funnel Beaker) culture of northern Europe and at much the same time in Yamnaya contexts in the Pontic-Caspian zone and in Europe in the Carpathian basin and northern Italy. It has been suggested that these vehicles evolved from sledge through sledge-on-rollers to sledge-on-wheels, an invention made possible by the introduction of castration to produce oxen, in the first instance to pull the plough. Oxen alone could serve as draught animals, given the weight of these carts and wagons with their solid disc wheels (Piggott 1983: 239). Agricultural requirements gave the initial stimulus to development of wheeled vehicles, implying extensive farm lands surrounding individual settlements. The advantages of wheeled transport

for commercial caravans would surely, however, have been recognized quite soon.

The mixed economy of the PIE homeland from the mid-fifth millennium BC must have been a source of economic strength. The additional acquisition of the means of rapid movement of personnel on horseback as well as of goods, if at a slower pace, by ox-cart gave the PIE population an advantage over all other contemporary ethnic groups, whether in Europe or the Near East. The PIE lexicon appears to add weight to the significance of wheeled transport in the Pontic-Caspian homeland. There has been discussion on the original birthplace of wheeled vehicles, whether in the Pontic-Caspian zone, in Sumer or (less plausibly) in Trans-Caucasia (Mallory 1989: 163). The orthodox view, crediting the Sumerians with this among many other technological innovations (Childe 1952), now requires reassessment. Not to be overlooked are the etymological parallels between PIE *$k^{w}ek^{w}lo$-*, Sumerian *gigir*, Semitic *galgal-* and Kartvelian *gigar*, all but the Sumerian being asterisked as PIE and other linguistic constructs (Gamkrelidze and Ivanov 1984; Mallory 1989: 163). The archaeological evidence is helpful, with an array of radiocarbon dates indicating that wheeled vehicles were widespread by the mid-fourth millennium BC. Although admittedly it is hard to push their origins back earlier in the fourth millennium BC, there is yet a slight chronological priority over the appearance of the Sumerian pictographic sign representing a four-wheeled vehicle.

The common words for 'wheel' evidently point to the dispersal of Indo-European groups, for whatever reasons, from the PIE homeland as having begun not before c.3300 BC. This general dating could be profoundly significant, though some doubts have been voiced on the linguistic palaeontology (Renfrew 1990).

The above discussion largely presupposes the possibility of deploying linguistic and archaeological data, reinforced by anthropological and historical insights, in the reconstruction of PIE culture in its widest sense. The minimalist view, however, holds that the very term "Indo-European" has a solely linguistic meaning. The same authority is nevertheless willing to accept common Indo-European traits, such as "Father Sky", the goddess "Dawn" and the significance of a code of conduct including the concepts of "hospitality" and "truth" in social life, the latter echoed millennia later by Darius I at Naqsh-i-Rustam. Moreover, the backbone of early Indo-European communities is agreed to have been a polity based on patrilinear extended families (Zimmer 1990b).

Chariots and Horsemen

From the miscellany of data assembled above conclusions must be put forward, some with more assurance than others.

There is no reason to doubt the importance in prehistoric times of economic pressures or incentives. The role of transportation in PIE relations with the Near East cannot be exaggerated, notably in the growth of trade. This was probably indirect, through intermediaries in the Hurrian lands of the ETC cultural zone. There is no proof of the commodities involved; but wheeled transport and pack animals would have been prerequisites. Apart from the earlier appearance in Mesopotamia of the potter's wheel, not directly relevant, the case for Sumerian primacy in manufacture of the wagon and the cart is unconvincing. Matters were different of course when radiocarbon determinations for Pontic-Caspian sites seemed to demonstrate a dating well after the Late Uruk period of Mesopotamia: now a higher absolute chronology is accepted. It has been tempting to attribute a wide range of innovations to the nascent urban society of southern Mesopotamia. Certainly the Sumerians, with their genius for administration, can be credited with the first full scale development of writing and irrigation. Sailing craft were regularly plying the waterways; and in due course Hammurabi was to make their crews liable to conscription in time of war (Driver and Miles 1952–55). The mass production of tools and weapons in cast tin-bronze seems also an achievement of the Sumerians, but surely not the wheeled venicle. For one thing, it was not widely suitable for use in the alluvial Tigris-Euphrates plain, divided as it was by innumerable waterways. The natural means of movement was by water, whatever the "Royal Standard"

of Ur may suggest. Limited land movement made for static, set-piece military engagements.

Archaeologists are too often inclined to examine and compare artifacts with little consideration for the craftsmen who produced them. The linguists can come to their aid by drawing attention to the privileged status of the cartwright in early Indo-Aryan society and likewise of the smith. The economic role of the former and the dependence of the farmer for his tools and the soldier for his weapons on the latter must cast some light, however oblique, on PIE and later Indo-European society. In Vedic India the craftsman may well have enjoyed privileges, such as his role in the sacrificial ritual, setting him rather apart from the main community, the priests, warriors and farmers. These are sometimes envisaged as the backbone of PIE society, too uncritically supposed to be founded on a tripartite structure (Mallory 1989: 131; Zimmer 1990a: 313). One argument discerns this tripartite social structure in a treaty of c.1380 BC between Mitanni and the Hittite kingdom, enlisting the aid of the Indic gods Mitra, Varuna, the war god Indra and the Nasatyas (Dumézil 1958). Vedic India, however, was not the same as the PIE Pontic-Caspian homeland. For one thing, there is no hint in the latter of the presence of a fourth class, the sudras, the non-Aryan conquered indigenous population of India.

Weapons do not occur in enough variety and quantity in the Yamnaya cultural context to provide clear archaeological indications of a prominent military class in PIE society. Nor can such evidence be detected in the largely contemporary Hurrian society of the ETC cultural zone to the south. Yet the PIE population, as indeed the Hurrians soon afterwards, possessed those two means for initial expansion, the horse and the wheeled vehicle. As mentioned above, the dispersal from the PIE homeland began from the later fourth millennium BC but not earlier. What more likely stimulus for such a dispersal, even if its precise form eludes us, than contact with the thrusting entrepreneurs of the Late Uruk Sumerian cities and their outposts (Algaze 1989) ? Many historical parallels show that sudden awareness of richer, more sophisticated societies is a powerful incentive to leave home in search of wealth.

By the second millennium BC these movements by early Indo-Europeans would have been greatly restricted but for the enhancement of the advantage of abundant supplies of horses, in the development of that formidable weapon of war, the horse-drawn chariot. Of light construction with spoked wheels, manoevrable on the battlefield, this was in no way comparable with the solid-wheeled ox-carts and wagons of the PIE homeland and in Sumer, the land of their adoption. As is well known, it was an Indic (Indo-Aryan) element which brought the disciplined use of chariotry to the kingdom of Mitanni, though their presence cannot be proved before the fifteenth century BC (Mallory 1989: 38). Linguistic evidence, however, implies an earlier period for the arrival of these Indo-Aryans in north Syria. The rapid dissemination across the Near East, including Egypt, of the horse-drawn chariot is attested from c.1700 BC. The argument is between those suggesting an independent development of the Near Eastern chariot from the heavy, disc-wheeled ox-cart (Littauer and Crouwel 1979: 68–71) and supporters of an Indo-European, specifically Indo-Aryan, origin. The wide dispersal of Indo-European words for 'wheel' (*ratha*, *rota* etc.), 'shaft-pole', 'axle', 'yoke' and 'harness' has influenced discussion (Mallory 1989: 275–6; *contra* Renfrew 1987: 86). Perhaps it would be wiser to make a contrast simply between a Near Eastern and an intrusive origin, the latter not exclusively Indo-European.

The archaeological evidence, though not abundant, may be said to support the argument for an intrusive, non-Near Eastern origin of the chariot, while the remarkable rapidity of its spread in the early second millennium BC also suggests its importation. The crucial innovation was the spoked wheel, widely attested in New Kingdom Egypt, known to have imported horses and chariots from Mitanni. At one time it seemed as if the earliest occurrence of the spoked wheel in the highland zone of the Near East was on some of the wagons buried with other, disc-wheeled wooden vehicles in Armenia, at Lchashen beside Lake Sevan. While these prove the wood-working skills of the local cartwrights, their dating is late, around the thirteenth century BC. The writer can no longer uphold his suggestion of the introduction of these vehicles to the Sevan area from Mitanni (Burney and Lang 1971: 105–6). The seven chariots among the fifty wheeled vehicles depicted in the rock drawings of the Syunik district in western Armenia

cannot be dated more precisely than to the second millennium BC. Moreover, they represent chariots — distinguished from the carts by rear rather than central axle — in design not military function, since the draught animals, where indicated, are not horses but oxen (Piggott 1983: 78–82). More relevant is the occurrence far to the north-east, on the Sintashta River in the southern Urals, of a cemetery where five timber-lined graves were excavated in 1972, revealing impressions in the soil of chariots with spoked wheels, having diameters of 0.90m. to 1.00m. There is also abundant evidence of horse sacrifice, with seven in one tomb (Piggott 1983: 91–2). The cultural context is Andronovo, thus dateable from the early second millennium BC: these chariots therefore occur in a vast cultural zone probably comprising a number of sub-provinces. Approximately contemporary evidence comes from a Timber-Grave Kurgan cemetery near Saratov on the lower Volga, where a chariot with spoked wheels is incised on a pot (Piggott 1983: 92–3).

The wider significance of these Andronovo and Srubnaya (Timber-Grave) finds is that they can with some assurance be set in a defined ethno-linguistic context, to be termed Indo-Iranian. The Andronovo zone can be equated with the territories of the historical Eastern Iranians (Saka, Massagatae, Sarmatians and Alans). The problem remains, à propos the origins of the horse-drawn chariot, of the relatively late date of the Sintashta cemetery. This being the earliest known surviving evidence of spoked wheels in the Eurasian steppes, it can be objected that there is no archaeological case for priority for the horse-drawn chariot outside the Near East. But this would be to ignore the ample evidence for early and widespread domestication of the horse, even though wild horses survived almost indefinitely, e.g. in the representation on a silver bowl of the early third millennium BC from Maikop (Piggott 1983: 88). Moreover, parallels between the earliest Yamnaya burials of the Volga-Ural group and graves in the Tobol basin east of the Urals, on the one hand, and the Afanasievo culture of the Minusinsk-Altai region around the headwaters of the Yenisey River, on the other hand, indicate a vast eastward expansion of the Yammaya (Pontic-Caspian) population and thus of the early Indo-Europeans. With them they took their material culture and ritual traditions. This expansion seems to have occurred by c.3000 BC (Mallory 1989: 62, 225–6). Thus an Indo-European population had penetrated two thousand miles east of the lower Volga, to the very heart of central Asia. With the availability of horses and timber, the long tradition of wooden carts and wagons and the vast scale in terms of territory and probably also of population, by prehistoric standards, it seems inconceivable that the horse-drawn chariot with spoked wheels had not been in use here long before the period of the above-mentioned Sintashta cemetery. The decisive argument is related to the nature of the steppes and the great distances. It has been observed that a solid-wheeled ox-cart moves at only one tenth of the pace of a horse-drawn chariot (Piggott 1983: 241). The movements required to gain new pastures, peacefully or by force, needed to be swift: there was time enough for women and children and family possessions to arrive at the sedate pace of an ox-cart caravan.

The horse-drawn chariot seems to have first arrived south of the steppes with the Indo-Aryan migration from the Andronovo zone. One group entered India and the other north-eastern Iran, the latter perhaps by c.3000 BC and as a direct outcome of the eastward expansion to the Yenisey. Except for the Gurgan plain and Tepe Hissar, there is little or no archaeological trace of these first Indo-Europeans to enter Iran. The term 'grey ware', familiar in the archaeological literature, is sometimes misused, at least by implication (Mallory 1989: 50), being occasionally used to embrace Early Bronze Age and Iron I pottery alike, instead of being restricted to the latter. This is no pedantic point, since the Iron I grey ware (Hasanlu V, Haftavan V etc.) is generally accepted as the hallmark of the Iranian migrations of the mid-second millennium BC, too late to be relevant to the origin of the chariot (Young 1967 and 1985).

It has been postulated, with good reason, that the Indo-Aryans first introduced or developed chariotry in Iran; and that it was adopted by the Hurrian and Kassite populations occupying much of western Iran (Diakonov 1984: 22). The gold bowl of Hasanlu, albeit of late date (unlikely to be earlier than c.1000 BC, though conceivably so), has a crowded design dominated by three chariots in a file, led by a god,

almost certainly the Hurrian storm god Teshub/Tesheba. The Urartian kings, who overran the Urmia basin in the late ninth century BC, are amply recorded as expert horsemen, giving a leading role in their army to the cavalry and chariotry (Burney and Lang 1971: 143; Melikishvili 1960: 204). What debt, if any, was owed by the Urartian army to the frontier regions in Trans-Caucasia in relation to chariotry is a question posed by such evidence as the quadrigae engraved on a bronze belt-plate from Astkhi-Blur in Armenia, attributed to the eighth or ninth century BC: the chariots are involved in a stag hunt (Piggott 1983: 136). The Assyrian military records are of course both written and pictorial. Chariotry was playing a major or at least significant role by the early thirteenth century BC under Shalmaneser I (Luckenbill 1926: 40), no doubt an outcome of the fall of Mitanni. The subsequent defeat of the Mushki by Tiglath-Pileser I, when he captured 120 chariots (Saggs 1984: 59), and Late Assyrian dependence on a supply of horses from such regions as the Urmia basin (Luckenbill 1927: 84) are noteworthy.

The spread of the lightly constructed chariot — suited to parades, hunting and raiding as well as to the battlefield, where it was controlled by the blowing of trumpets — westwards to central Europe (Slovakia) and eastwards to Vedic India and even to China during the Shang period (c.1850–1027 BC) emphasizes the immense span of Indo-European activity. The adoption of chariots in China marks their dissemination beyond the Indo-European sphere. Later on, Sun Tzu, living late in the Spring and Autumn Period of Chinese history (c.770–477 BC), compiled a military manual, *The Art of War*, full of profound good sense and still highly regarded, in which the use of chariots is mentioned (Sun Tzu 500 BC).

Two Peoples ?

This discussion has touched only briefly on the interrelationships between Hurrians and Indo-Europeans. It is now appropriate to draw what conclusions are possible, while yet posing questions which cannot be answered here, if anywhere.

The problems of the PIE and Hurrian homelands are here treated as solved, in that the evidence points overwhelmingly to the Pontic-Caspian and ETC cultural zones respectively (Fig. 1). There is a geographical common frontier, approximating to the Caucasus, though later the picture becomes much less sharply focussed, notably in Iran. Both ethnic groups seem to have derived aspects of their culture from the Caucasus, such as viticulture especially for the Hurrians; the PIE lexicon relates to a mountainous land; and rivers and mountains are significant in both mythological traditions. But there are differences, including the disparity of our knowledge of the cultural antecedents. There is one chronological synchronism, the emergence of the ETC culture and of the Yamnaya (Pit-Grave) culture at much the same time, around 3600 BC. Yet there is no equivalent in the Hurrian homeland to the Sredny Stog culture of the Dnieper-Donets region, evidence of which enables the archaeological dimension of the PIE homeland to be stretched back well into the fifth millennium BC. Present-day knowledge of eastern Anatolia in the fifth and early fourth millennia BC, however, remains virtually non-existent, except for the Malatya-Elaziğ region and also the Urmia basin. The far more restricted habitat of Hurrian-speakers compared with that of speakers of Indo-European languages after the dispersal from the PIE homeland has contributed to the narrower vision of their proto-lexicon. Of course debate continues round the whole question of the validity of linguistic palaeontology; and many scholars are sceptical of those reconstructed words preceded by an asterisk !

Hurrians and Indo-Europeans had much in common in their cultural traditions. Both were centred round the patrilinear family, evident in Hurrian property laws at Nuzi (Justins 1992: 450). The Indo-European sky god and the Hurrian weather god are broadly comparable. Religion was not codified in temples, priesthoods and their rituals, except where acculturation occurred in the Near East. Music and recitation accompanied rituals and social gatherings in both ethnic homelands. Solid-wheeled vehicles became widespread in both homelands before chariotry appeared. Both societies were essentially tribal for most of the time, until the Urartian collaterals of the Hurrians established their

kingdom, even if extensive tribal alliances may have been more easily established in the open plains and steppes of the Pontic-Caspian zone.

Warfare must have been more widespread and culturally significant than appears from available data. Warrior burials are widely distributed in the Near East from the later third into the early second millennium BC, but die out c.1600 BC (Philip 1995). The highly detailed annals of the Assyrian kings, however, are hardly reflected in the archaeological record for Anatolia or Iran. Only cities such as Nineveh, violently and permanently destroyed, have left clear evidence in the ground of their destruction. In preliterate times armies could march through alien territory without leaving any signs of their passing likely to be detectable today. Such forays would have been simpler in the Pontic-Caspian zone and on the steppes to eastward than in the Hurrian homeland with its natural barriers to easy movement. The Vedic records contribute to the evidence of a military class in the Indo-European world, in those lands under the tutelage of the war god Indra. The term "Aryan", used of himself by Darius I and properly limited to the Indo-Iranians, carries the meaning of 'member of the community' and by extension 'kinsman' or 'friend' (Szemerenyi 1977: 125–49).

Times of unrest or war can hinder or destroy trade, particularly where merchants have to travel long distances through insecure or hostile regions. War can,however, be a stimulus to economic endeavour by increasing demand, especially for metals. The Sumerians were great imitators, acquiring their economic superiority largely through their administrative talents, with the added advantage of operating on interior lines in relations with peripheral lands lacking political unity. The initial phase of economic expansion had come in the later fourth millennium BC, just at the time when the diaspora from the PIE homeland was beginning. Was there perhaps a causal connection ? Be that as it may, trade from the heart of the ETC cultural zone, the Hurrian homeland, would pass through such "gateway" settlements as Arslantepe near Malatya, itself a metal-working centre (Frangipane and Palmieri 1983: 394–406; Burney 1993). Links between the Pontic-Caspian zone and the Near East beyond the ETC zone at this time were very possibly more significant via the Balkans and north-western Anatolia than via the Caucasus, though such north-south movements have been suggested (Mallory 1989: 263–4). Later, in the second millennium BC, cultural influences tended rather to move northwards from the Urmia basin into Trans-Caucasia. The dating and distribution of kurgans in and around Trans-Caucasia implies an interchange of populations either side of the Caucasus.

The PIE homeland may well have witnessed a phenomenon comparable with the swarming of bees, a *colluvies gentium*, in that people from round and about were drawn as by a magnet to the wide cattle-rearing grasslands, where there was space to expand and to secure a firm base for the family. This gathering of tribes may initially not have been related to ties of kinship but rather to economic stimuli. Thus the marginalized elements in surrounding regions — wandering craftsmen, landless younger sons, tinkers and even perhaps would-be mercenaries — would have been attracted to these wide new spaces (Zimmer 1990b: 145–6). Once they ceased to be wide enough, the urban communities of much of the Near East were in danger. A similar phenomenon, on a smaller scale, is observable with the Habiru in the Fertile Crescent during the second millennium BC.

What, finally, can be said of Indo-Europeans and Hurrians in the Near East ? Both technologically and in military skills they were a positive and sometimes interrelated force, highlanders and steppe pastoralists among and at times against the old sedentary urban and rural communities. Nowhere except in Iran and in the ETC zone with its eventual successor state of Urartu did these northerners come to a dominant role, as did the Aryan invaders of northern India.

Whether the archaeologists, linguists, historians and anthropologists are justified in seeking to distinguish different ethnic groups is arguable. This has proved a difficulty in a very different context, the age of the gradual Anglo-Saxon occupation and ultimate conquest of the land since called England. The juxtaposition of two groups, the older Celtic inhabitants and the Germanic intruders, is recognizable in graves of the fifth and sixth centuries AD, where the Anglo-Saxon invaders were buried with weapons

but not so the native Britons. Moreover, there was a difference of two inches (five centimetres) in the average stature of the taller Anglo-Saxons and the shorter Britons. The genetic mixture was such that by the seventh to ninth centuries AD the stature of the two groups had levelled out at the mean between the shorter Celts and taller Anglo-Saxons. The ultimate answers may be reached through DNA tests, now being conducted on physical remains from north Germany and Denmark and from England and Wales (Härke 1995a-b). Turning once again to eastern Europe, it is perhaps unfortunate to find unspecified reference to genetic evidence "supporting the hypothesis of two originally separate homelands for the Uralic and Indo-European peoples..." (Haarmann 1994: 285).

In the final analysis, ethnic identity is not in any meaningful sense shaped by genes but by cultural identity, wherein language plays a significant but not necessarily a dominant role. An Indo-Aryan — Hurrian symbiosis has been suggested (Mayrhofer 1966: 29). One linguist even claims (Justins 1992: 450) that "if the Hurrian language... were not so clearly non-Indo-European in its particulars, one would ask if the Hurrians were not more Indo-European than the Hittites." What more can be said ?

Abbreviations

ETC = Early Trans-Caucasian, PIE = Proto-Indo-European.

List of publications cited

AS ..... *Anatolian Studies*
BAR ..... *British Archaeological Reports*
JAOS ..... *Journal of the American Oriental Society*
JIES ..... *Journal of Indo-European Studies*

Algaze, Guillermo
1989 The Uruk expansion, *Current Anthropology* 30: 571–608.

Anthony, David W.
1986 The "Kurgan culture", Indo-European origins and the domestication of the horse: a reconsideration, *Current Anthropology* 27: 291–314.
1991 The archaeology of Indo-European origins, JIES 19: 193–222.

Anthony, David W. and Brown, Dorcas
1991 The origins of horseback riding, *Antiquity* 65(246): 22–38.

Burney, Charles
1958 Eastern Anatolia in the Chalcolithic and Early Bronze Age, AS 8: 157–209.
1961–1964 Excavations at Yanik Tepe 1960-1962, *Iraq* 23: 138–53; 24: 134–49; 26: 54–61.
1989a Hurrians and Proto-Indo-Europeans: the ethnic context of the Early Trans-Caucasian culture, in Emre, Hrouda *et al.* 1989: 45–51.
1989b The Khirbet Kerak question and the Early Trans-Caucasian background, in Miroschedji 1989: 331–9.
1990 The Indo-European impact on the Hurrian world, in Markey and Greppin 1990: 45–52.
1993 Arslantepe as a gateway to the highlands: a note on Periods VIA-VID, in Frangipane, Hauptmann *et al.* 1993: 311–7.
1994 Contact and conflict in north-western Iran, *Iranica Antiqua* 29: 47–62.
(in press) The highland sheep are sweeter, paper delivered to a symposium on *Cultural Interaction in the Ancient Near East* in the University of Melbourne, autumn 1994.

Burney, Charles A. and Lang, David Marshall
1971 *The Peoples of the Hills*, London: Weidenfeld and Nicolson.

Campbell, Stuart and Green, Anthony R. (editors)
1995 *The Archaeology of Death in the Ancient Near East*, Oxbow Monograph 51. Oxford: Oxbow Books.

Carter, Elizabeth and Parker, Andrea
1995 Pots, people and the archaeology of death in northern Syria and southern Anatolia in the latter half of the third

millennium BC, in Campbell and Green 1995: 96–116.

Childe, V. Gordon
1926 *The Aryans: A Study of Indo-European Origins*, London: Kegan Paul, Trench, Trubner and Co.
1952 *New Light on the Most Ancient East*, London: Routledge and Kegan Paul.

Çilingiroğlu, Altan
1984 The second millennium painted pottery tradition of the Van lake basin, AS 34: 129–39.

Conti, Anna Maria and Persiani, Carlo
1993 When worlds collide: cultural developments in eastern Anatolia in the Early Bronze Age, in Frangipane, Hauptmann *et al.* 1993: 361–413.

Diakonov, Igor M.
1971 *Hurrisch und Urartaisch*, Munich: R. Kitzinger.
1984 *The Prehistory of the Armenian People*, revised edition, translated by Lori Jennings. Delmer, New York: Caravan Books.
1985a On the original home of the speakers of Indo-European, JIES 13: 92–174.
1985b Hurro-Urartian borrowings in old Armenian, JAOS 105: 597–603.
1990 Language contacts in the Caucasus and the Near East, in Markey and Greppin 1990: 53–65.

Diakonov, Igor M. and Starostin, Sergei A.
1986 *Hurro-Urartian as an Eastern Caucasian Language*, Munich: R. Kitzinger.

Diebold, A. Richard
1992 The traditional view of the Indo-European paleoeconomy: contradictory evidence from anthropology and linguistics, in Polomé and Winter 1992: 317–67.

Driver, Godfrey R. and Miles, John C.
1952–55 *The Babylonian Laws* (2 volumes), Oxford: Oxford University Press.

Drower, Margaret S.
1973 Syria, c.1550-1400 BC, *Cambridge Ancient History II (i)*, 3rd. edition: 417–525. Cambridge: Cambridge University Press.

Dumézil, Georges
1958 *L'Idéologie Tripartie des Indo-Européens*, Brussels: Burchem Latomus.
1977 *Les Dieux Souverains des Indo-Européens*, Paris: Gallimard.

Dyson, Robert H. *et al.*
1989 East of Assyria: the highland settlement of Hasanlu, *Expedition* 31 (2/3): 1–127.

Easton, Donald F.
1976 Towards a chronology for the Anatolian Early Bronze Age, AS 26: 145–73.

Edwards, Michael R.
1983 *Excavations in Azerbaijan (North-Western Iran) I — Haftavan Period VI*, Oxford: BAR International Series 182.
1986 "Urmia Ware" and its contribution in north-western Iran in the second millennium BC: a review of the results of excavations and surbeys, *Iran* 24: 57–77.

Emre, K., Hrouda, B., Mellink, M. and Özgüç, N. (editors)
1989 *Anatolia and the Ancient Near East — Studies in Honor of Tahsin Özgüç*, Ankara: Türk Tarih Kurumu.

Frangipane, Marcella and Palmieri, Alba
1983 Perspectives on Protourbanization in Eastern Anatolia: Arslantepe (Malatya). An Interim Report on 1975–1983 Campaigns, *Origini* 12(2): 287–668.

Frangipane, M., Hauptmann, H., Liverani, M., Matthiae, P. and Mellink, M. J. (editors)
1993 *Between the Rivers and Over the Mountains — Archaeologica Anatolica et Mesopotamica Alba Palmieri Dedicata*, Rome: Department of Historical, Archaeological and Anthropological Sciences, University of Rome "La Sapienza".

Friedrich, Paul
1970 *Proto-Indo-European Trees: The Arboreal System of a Prehistoric People* Chicago: University of Chicago Press.

Fuji, H., Ii, H., Kawamata, M., Numoto, H., Oguchi, H., Matsumoto, K. and Yagi, K.
1987 Working report on the first season of Japanese archaeological excavation in the Saddam Dam Salvage Project, *Researches on the Antiquities of Saddam Dam Basin Salvage and Other Researches*: 33–61, State Organization of Antiquities and Heritage of Iraq.

Gamkrelidze, Thomas V.
1989 Proto-Indo-Europeans in Anatolia, JIES 17: 341–50.
1990 On the problem of an Asiatic original homeland of the Proto-Indo-Europeans, in Markey and Greppin 1990: 5–14.

Gamkrelidze, Thomas V. and Ivanov, V. V.
1984 *Indo-europejskij jazyk Indo-evropejcy — Rekonstrukcija istoriki tipologicheskij analyz prajazyka i protokultury*. 2 volumes. Tbilisi: Tbilisi University Press.
1985 The ancient Near East and the Indo-European question: of tribes speaking Indo-European dialects, JIES 13: 3–91.

Ghirshman, Roman
1977 *L'Iran et la Migration des Indo-Aryens et des Iraniens*, Leiden: Brill.

Gibbon, Edward
1776–87 *The History of the Decline and Fall of the Roman Empire*, London.

Gimbutas, Marija
1990 The social structure of Old Europe — Parts 2–4, JIES 18: 225–84.

Greppin, John A. C.
1987? The effect of the Hurrian people and their language upon the earliest Armenians, offprint.

Haarmann, Harald
1994 Contact linguistics, archaeology and ethnogenetics: an inter-disciplinary approach to the Indo-European homeland problem, JIES 22: 266–88.

Hanzhang — *see* Sun Tzu

Härke, Heinrich
1995a Finding Britons in Anglo-Saxon graves, *British Archaeology* 10: 7.
1995b Make no bones about it. The English are really Celts, *Daily Telegraph* (16 December).

Harris, Alice C.
1990 Kartvelian contacts with Indo-European, in Markey and Greppin 1990: 67–100.

Henning, W. B.
1978 The first Indo-Europeans in history, in Ulmen 1978: 216–29.

Herodotus
1946–50 (reprinted) *Histories*: Loeb Classical Library: 4 volumes. English translation by A. D. Godley. London: Heinemann.

Huot, J. -L., Yon, M. and Calvet, Y.
1985 *De l'Indus aux Balkans: Recueil à la Mémoire de Jean Deshayes*, Paris: Editions Recherche sur les Civilisations.

Justins, Carol F.
1992 The impact of non-Indo-European languages on Anatolia, in Polomé and Winter 1992: 443–67.

Koşay, Hamit Z.
1976 *Keban Project Publications Series III — Pulur Excavations 1968–1970*, Ankara: Middle East Technical University.

Littauer, M. A. and Crouwel, J. H.
1979 *Wheeled Vehicles and Ridden Animals in the Ancient Near East*, Leiden: Brill.

Luckenbill, Daniel David
1926 *Ancient Records of Assyria and Babylonia Volume I.*
1927 *Ancient Records of Assyria and Babylonia Volume II*, Chicago: University of Chicago Press.

Mallory, James P.
1973 A short history of the Indo-European problem, JIES 1: 21–65.
1981 The ritual treatment of the horse in the early Kurgan tradition, JIES 9: 205–26.
1982 Indo-European and Kurgan fauna I: wild mammals, JIES 10: 193–222.

1984 Proto-Indo-European and Kurgan fauna II: fish, JIES 12: 263–79.
1989 *In Search of the Indo-Europeans*, London, Thames and Hudson.
1990 Social structure in the Pontic-Caspian Eneolithic: a preliminary review, JIES 18: 15–57.
1991 Kurgan and Indo-European fauna III: birds, JIES 19: 223–34.

Markey, Thomas L. and Greppin, John A. C. (editors)
1990 *When Worlds Collide — Indo-Europeans and Pre-Indo-Europeans*. The Bellagio Papers. Ann Arbor: Karoma Publishers.

Marro, C.
1993 Introduction à la céramique du haut-Euphrate au Bronze Ancien, *Anatolia Antiqua* 2: 43–69.

Matthews, Donald and Eidem, J.
1993 Tell Brak and Nagar, *Iraq* 55: 201–7.

Mayrhofer, Manfred
1966 *Die Indo-Arier im Alten Vorderasien*, Wiesbaden: Otto Harrassowitz.

Melikishvili, G. A.
1960 *Urartskie Klinobraznye Nadpisi* (Urartian Cuneiform Inscriptions), Moscow: USSR Academy of Sciences.

Mellaart, James
1958 The end of the Early Bronze Age in Anatolia and the Aegean, *American Journal of Archaeology* 62: 9–33.
1981 Anatolia and the Indo-Europeans, JIES 9: 135–49.

Meskell, Lyn
1995 Goddesses, Gimbutas and 'New Age' archaeology, *Antiquity* 69: 74–86.

Milano, L.
1991 Mozan 2: the epigraphic finds of the sixth season, *Syro-Mesopotamian Studies* 5(1): 1–34.

de Miroschedji, Pierre
1989 *L'Urbanisation de la Palestine à l'Âge du Bronze Ancien*, Oxford: BAR International Series 527 (i-ii).

Oates, David
1987 Excavations at Tell Brak 1985–86, *Iraq* 49: 175–91.

Oddy, W. A. (editor)
1977 *Aspects of Early Metallurgy, Occasional Paper* 17. London: British Museum (Historical Metallurgy Society and British Research Laboratory).

Palmieri, Alberto M., Sertok, Kemal and Chernykh, Evgenij
1993 From Arslantepe metalwork to arsenical copper technology in eastern Anatolia, in Frangipane, Hauptmann *et al.* 1993: 573–99.

Philip, Graham
1995 Warrior burials in the ancient Near Eastern Bronze Age: the evidence from Mesopotamia, western Iran and Syria-Palestine, in Campbell and Green 1995: 140–54.

Piggott, Stuart
1983 *The Earliest Wheeled Transport From the Atlantic Coast to the Caspian Sea*, London: Thames and Hudson.

Poliakov, L.
1974 *The Aryan Myth*, London: University of Sussex Press.

Polomé, Edgar C.
1992 Comparative linguistics and the reconstruction of Indo-European culture, in Polomé and Winter 1992: 369–90.

Polomé. Edgar C. and Winter, Werner
1992 *Reconstructing Languages and Cultures — Trends in Linguistics: Studies and Monographs 58*, Berlin and New York: Mouton de Gruyter.

Renfrew, Colin
1987 *Archaeology and Language — The Puzzle of Indo-European Origins*, London: Jonathan Cape.
1990 Archaeology and linguistics: some preliminary issues, in Markey and Greppin 1990: 15–24.

Roaf, Michael D.
1990 *Cultural Atlas of Mesopotamia and the Ancient Near East*, Oxford and New York: Facts on File Ltd.

Saggs, Harry W. F.
1984 *The Might That Was Assyria*, London: Sidgwick and Jackson.

Sagona, Antonio G.
1984 *The Caucasian Region in the Early Bronze Age*, Oxford: BAR International Series 214 (i-iii).
1993 Settlement and society in late prehistoric Trans-Caucasus, in Frangipane, Hauptmann *et al.* 1993: 453–74.
(in press) Between the Aras and Karasu Rivers: archaeology in the highlands of eastern Anatolia, paper delivered to a symposium on *Cultural Interaction in the Ancient Near East* in the University of Melbourne, autumn 1994.

Stein, Diana L.
1984 Khabur ware and Nuzi ware: their origin, relationship and significance, *Assur* 4/1: 1–65, Malibu: Undena Publications.
1989 Art and architecture, chapter in Wilhelm 1989: 80–90.

Steiner, Gerd
1990 The immigration of the first Indo-Europeans into Anatolia reconsidered, JIES 18: 185–214.

Strabo
1917–54 *Geography*: Loeb Classical Library: 8 volumes. English translation by H. L. Jones and J R. S. Sterrett. London: Heinemann.

Sun Tzu
c.500 BC *The Art of War*, with commentary by General Tao Hanzhang. English translation by Yuan Shibing. Ware, England: Wordsworth Editions.

Szemerenyi, Oswald
1977 Studies in the kinship terminology of the Indo-European languages, *Acta Iranica* 7: 1–240.

Tarhan, M. Taner and Sevin, Veli
1975 The relation between Urartian temple gates and monumental rock niches, *Türk Tarih Kurumu Belleten* 39: 401–12.

Ulmen, A. L. (editor)
1978 *Society and History — Essays in Honour of Karl August Wittfogel*, The Hague: Mouton.

della Volpe, Angela
1990 From the hearth to the creation of boundaries, JIES 18: 157–84.

Wilhelm, Gernot
1989 *The Hurrians*, English translation by Jennifer Barnes. Warminster, England: Aris and Phillips.

Winn, M. M.
1974 Thoughts on the question of Indo-European movements in Anatolia and Iran, JIES 2: 117–42.

Winter, Irene J.
1989 The "Hasanlu Gold Bowl": thirty years later, in Dyson *et al.* 1989: 87–106.

Young, T. Cuyler
1967 The Iranian migration into the Zagros, *Iran* 5: 11–34.
1985 Early Iron Age Iran revisited: preliminary suggestions for the reanalysis of old constructs, in Huot *et al.* 1985: 361–78.

Zimmer, Stefan
1990a The investigation of Proto-Indo-European history: methods, problems, limitations, in Markey and Greppin 1990: 311–44.
1990b On Indo-Europeanization, JIES 18: 141–55.

Zwicker, U.
1977 Investigations on the extractive metallurgy of Cu/Sb/As ore and excavated smelting product from Norşuntepe (Keban) on the upper Euphrates (3500–2800 BC), in Oddy 1977: 13–26.

A REASSESSMENT OF THE DISTRIBUTION OF KHABUR WARE: AN APPROACH FROM AN ASPECT OF ITS MAIN PHASE

Hiromichi OGUCHI*

Introduction

Archaeologists, excavating sites and analyzing artifacts found there, have attempted to give an accurate picture of what happened in terms of material culture. Since pottery is one of the most common classes of artifacts, it was, and is still, an object for such archaeologists' attempts. A ceramic category, which archaeologists distinguish and define by similarities in style, forms part of a material culture representing the sum of social activities. The uniformity of material culture style in an area is presumed to reflect the close social relationships between groups of people living in villages, towns and cities of the area. In this sense, material culture style is an index of social relations by which a social unit is formed; such a unit is comprised of socially-interrelated people sharing similar symbolic representation and similar material expression. A ceramic category, regarded as homogeneous in style, is also considered as reflecting a social unit comprising groups of people closely related in space. Pottery style is most concerned with decorative treatment such as painting, appliqué and incising. Khabur ware is a ceramic category recognized by stylistic similarities in painted decoration.

Essential for such archaeologists' attempts is the examination of the spatial and temporal distributions of certain artifact and feature types, which affords a basic framework for delineating the spread and process of material culture and interpreting them in time and space. Since pottery style changes easily and fairly rapidly, pottery itself is not only an index for defining a social unit but also one of the sensitive time markers for relative chronology. Hence an analysis of the spatial and temporal distributions of a certain ceramic category has an important role in archaeological interpretation.

However, we are always faced with interpretative problems in attempts to clarify causal factors in the distribution of a certain pottery style and in stylistic changes of pottery. What we can now at least assert are the facts that ceramic distributions certainly reflect interpersonal contact involving exchanges of ideas, which may possibly have given a stimulus to people's modifying and changing style, and that changes, through time, of ceramic distributions reflect changes in interpersonal contact.

Needless to say, contact between groups within a society sharing the same pottery style must have been very close. The more frequent contact between different societies was, the stronger the probability that pottery style diffused beyond a society would be. The distribution of Khabur ware presents enigmatic and interesting problems, dividing into its main distribution zone and several secondary distribution areas diverging from the main zone. Because we can know historical facts, if fragmentarily, from documentary sources of the period in which Khabur ware was in use, we have been so far given, and are still given, an opportunity to explain how and why the painted pottery was distributed through space, and furthermore, through time. Carol Hamlin's synthetic study of Khabur ware has guided us in speculating about several possibilities for interpretation on the distribution of Khabur ware [Hamlin 1971: pp.304–310; *idem* 1974: p.132; Kramer 1977: pp.104–108]. Now that archaeological and historical data are increasing through recent excavations, problems which emerge in this connection require reconsideration[1]. On this happy occasion, in the *Festschrift* for Professor Hideo Fujii, the present article deals with the problem of interpreting the distribution of Khabur ware outside the main distribution

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1) The present writer envisages discussing problems concerned with Khabur ware in separate articles.

zone in the period defined as the main phase of the sequence of Khabur ware, aiming at giving possible explanations for the occurrences of Khabur ware in those secondary distribution areas which are elucidated below.

Periodization

The phasing of the Khabur ware sequence can be made on the basis of evidence from Area C of Tell Jigan, and supplementary evidence from Areas A and B of the same site, and from Tell Der Hall, Tell Fisna, Tell Jessary and Tell Thuwaij. These are sites excavated by the Japanese Archaeological Expedition, directed by Professor Fujii, in the area of the Saddam (Eski Mosul) Dam Salvage Project in Iraq. The area of the project, lying in the northeast provincial region of the main distribution zone of Khabur ware, is significant, since it may have been situated in the northern vicinity of, or included as a north part of, Nurrugum, a district mentioned in the Mari texts and in other texts from Nineveh and Tell Shemshara[2].

Four Khabur ware phases are established, which are described by the present writer as Khabur Ware Periods 1–4 (Fig. 1)[3]. Relevant to the subject of the present article is Khabur Ware Period 2, which is marked as the main phase in which Khabur ware reached the acme of fashion. This second phase can be now dated on epigraphic evidence almost certainly from beginning to end (see below). The establishment of the earliest phase, Khabur Ware Period 1, is based on evidence from Tell Jigan, which is further corroborated by important evidence from Tell al-Rimah and Tell Taya in the Tell 'Afar region of Iraq [J. Oates 1970: p.17, for area AS phase 3 at Rimah; Reade 1968: p.257 and 1982a: p.74, for level IV at Taya]. The point is that the earliest phase, marked by distinctive types of Khabur ware, can be dated with certainty before Šamši-Adad I of Assyria, whose reign is, at present, most concerned with the beginning of Khabur Ware Period 2. After the second phase, new types and styles of pottery appear, parallelling the continuous occurrence of Khabur ware itself. The relevant phases are Khabur Ware Periods 3–4. The perception of new types and styles of pottery during the periods 3–4 is concerned with the problem in dispute of categorizing a later variety of Khabur ware[4], which connotes the problem of the definition of Nuzi ware[5], further involving the problem of how to define Khabur ware [for this particular argument, see D.L. Stein 1984: p.6ff., esp. p.23; *cf.* Hrouda 1989: pp.206–209]. However, there seems another problem in that discussions regarding a later variety of Khabur ware tend to focus only on those which are considered drinking vessels, *i.e*, which are described as cups, goblets and beakers. In practice, the presence of jars, pots and bowls, contemporary with the drinking vessels in question, should be taken into consideration: examination from this viewpoint seems to enable the elucidation of the sequence of Khabur ware proper beyond all dispute. The setting of the periods 3–4, under the heading of the term "Khabur ware", is grounded on this view; therefore, Khabur Ware Period 3–4 are set up as the phases marked primarily by the continuous occurrence of jars, pots or bowls which can be regarded as Khabur ware, and secondly by the presence of some jars, pots or bowls showing typological continuity from the preceding period, 2. In addition, it is worthy of note that on the basis of results of recent excavations at Tell Brak, Joan Oates points out that dark-painted goblets with distinctive bird motifs[6] are accepted as characteristic of "late" Khabur ware [personal communication in 1995]. Her

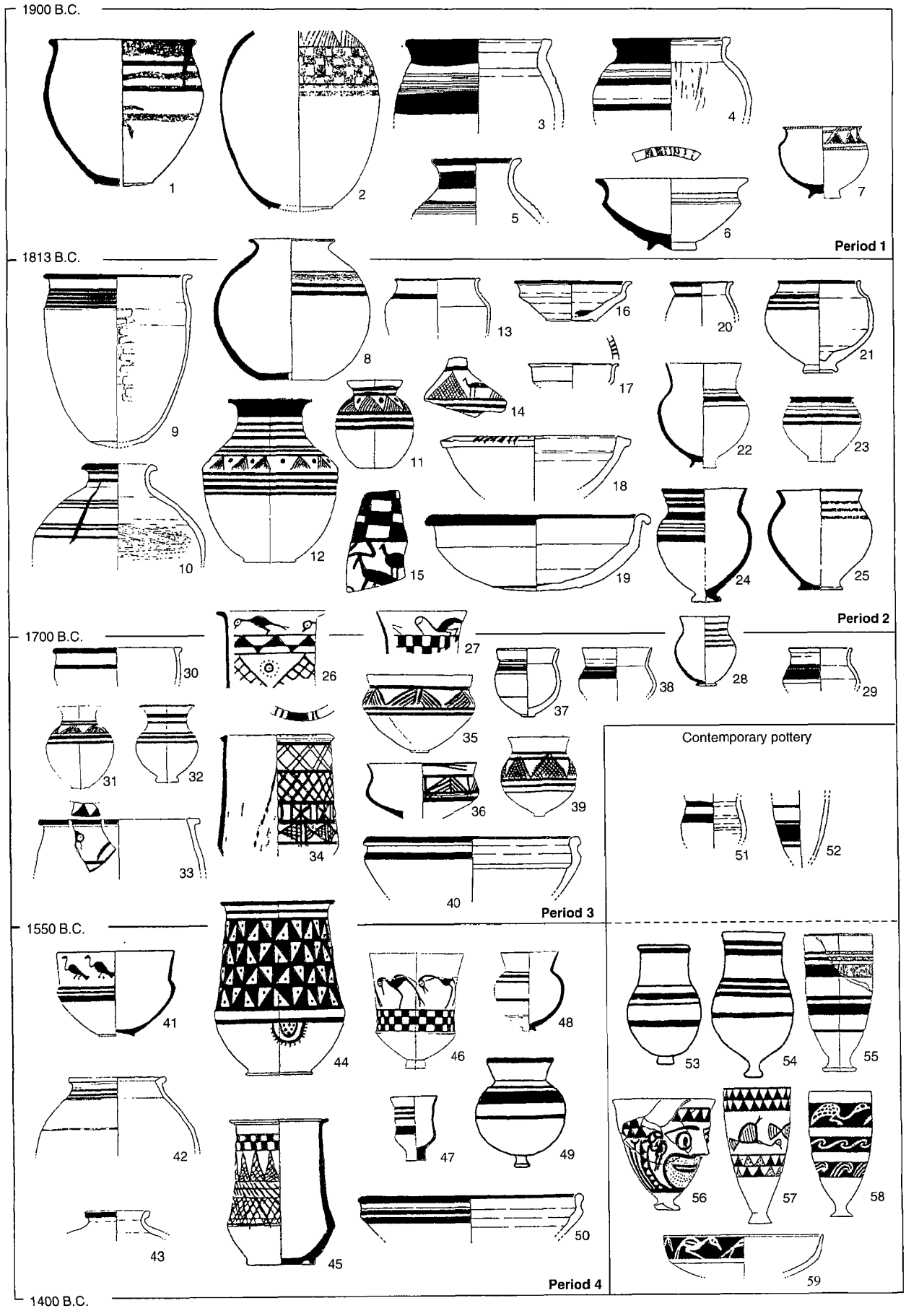
2) For Nurrugum, see Thompson & Hamilton 1932: pp.105-106, D. Oates 1968b: p.31 and p.39, and Eidem 1985: p.99 and p.101.

3) The explication of the phasing is given in a separate article.

4) The "late" Khabur ware of Mallowan [1947], the "*jüngere*" Khabur ware of Hrouda [1957], the "transitional Khabur-Mitannian" ware of Kantor [1958], the "late Khabur/early Nuzi" type pottery of D. Oates [1972] and the newly defined "younger" Khabur ware of D.L. Stein [1984] have been so far known as concepts of a later variety of Khabur ware. These concepts either differ in all respects or overlap in some respects.

5) Basically, Nuzi ware is the pottery distinguished by the presence of white-painted decoration superimposed on dark-painted bands. In addition, it should be noted that in the corpus of Nuzi ware, composed of various types, there occurs a coarser ware, and conversely that a fine ware occurs among the Khabur ware vessels appearing in an earlier stage.

6) The distinctive bird motifs [*e.g.* Mallowan 1947: Pl.LXXVIII:5,8,9] are those which should be differentiated from the earlier bird motifs that occur on Khabur ware from stratum 4 at Tell Billa [see Speiser 1933: Pl.LXXII].



Scale 1:10 (nos. 1, 2, 8–12, 30–33, 42 & 43); Scale 1:7 (nos. 3–6, 13, 14, 16, 18, 19, 40 & 50); Scale 1:6 (nos. 7, 15, 17, 20–29, 34–39, 41, 44–49, 51–59). See the references to this figure, given below.

Fig. 1 Suggested periodization for Khabur ware.

view, based on stratigraphic evidence from area HH at Brak, carries weight with us, suggesting that in area H.H. excavated in the past by M.E.L. Mallowan, "late" Khabur ware occurred not only in level 3 but also in level 2[7]. The Brak area H.H. level 3 is well known as the level in which Mallowan confirmed that Khabur ware overlapped with white-on-dark painted Nuzi ware [Mallowan 1947: pp.77–78]. In fact, increasing pieces of evidence from sites recently excavated, such as Tell Leilan, Tell Mohammed Diyab and Tell Brak (*inter alia*, Matthews's most recent excavations) in the upper Khabur basin, and Tell Hamad Agha as-Saghir in north Iraq, suggest that the following painted vessels should be treated as being included in the category of Khabur ware:

(1) straight/concave-sided beaker type painted vessels, which have occasionally distinctive bird motifs of dark paint (Fig. 1:26, 27, 34, 44–46);
(2) jars, pots or bowls decorated with distinctive bird motifs in dark paint (Fig. 1:33);
(3) band-painted, eversible-necked/rimmed shoulder cups, referred to by Barthel Hrouda as one of the types of "*jüngere*" Khabur ware[8], which are however sometimes decorated with cross-hatched triangles (Fig. 1:22, 24, 28, 37–39, 48, 49).

Furthermore, other types of Hrouda's "*jüngere*" Khabur ware, represented by "band-painted, tall-necked shoulder cups" [Hrouda 1957: Taf. 8:1–9, 13–18, 20, from Aššur] (see Fig. 1:51, 53, 54) and "band-painted open-form goblets"[9] [*e.g.* Mallowan 1947: Pl. LXXVII:2, from area H.H. level 2 at Brak; Pfälzner 1995: Taf. 173:d, from the Mitanni palace of Brak] (see Fig. 1:52, 55), must be, as claimed by Diana L. Stein, disassociated from the category of Khabur ware. The "band-painted open-form goblets", appearing late in, or possibly towards the end of, Khabur Ware Period 3, continue to occur in post-Khabur ware phases, *i.e.*, after Khabur Ware Period 4 in which Khabur ware jars, pots and bowls, though small in quantity, still occur alongside of white-on-dark painted Nuzi ware (see Fig. 1:58, 59, for Nuzi ware). Likewise, the "band-painted, tall-necked shoulder cups", also appearing late in Khabur Ware Period 3, seem to occur after the disappearance of Khabur ware[10].

The dates of Khabur ware

The upper date of Khabur ware, *i.e.*, the date for the beginning of Khabur Ware Period 1, is inconclusive because of the lack of epigraphic evidence. However, an indication is given by the fact that David Oates's recent excavations at Tell Brak in areas FS and SS confirmed the occurrence of 20th century B.C. pottery including southern early Isin-Larsa types [Oates & Oates 1994: p.171]. The Brak evidence suggests the certain existence of an occupation phase in north Mesopotamia in the earliest part of the 2nd millennium B.C., which probably corresponds in date to level V, a "barren" layer, at Tell Taya. A picture of north Mesopotamia in the period immediately before the appearance of Khabur ware is thus becoming clearer than before[11]. In consideration of the evidence from Brak, a date of *ca.* 1900 B.C. for the beginning of Khabur Ware Period 1 is suggested.

The lower date of Khabur ware has been so far problematical, with the problem of a later variety of Khabur ware unsolved. Although Khabur ware and white-on-dark painted Nuzi ware occur overlapping in time, what matters is the fact that the date for the beginning of Nuzi ware, based on tablets from Nuzi and Alalaḫ, is less conclusive than we might wish [see D.L. Stein 1989: p.36ff.]. D. Oates's recent

7) *E.g.* Mallowan 1947: Pl.LXXVII:1. See Fig.1:46.
8) In particular, Hrouda 1957: Taf.7:6, from Aššur. As for this type of pottery, changes of base types are appreciated through phases of Khabur ware, defined here [for this, see also Spanos 1992: pp.194–195]. Further, see a description regarding Tell Leilan, given below.
9) A "nipple-based" variety of Hrouda's "*jüngere*" Khabur ware should be, however, excluded from consideration [Hrouda 1957: Taf.7:4,5,7]: nipple bases are characteristic of pottery occurring in post-Khabur ware phases.
10) As for this, the excavations at Tell Aqrah may give an indication [el-Amin & Mallowan 1950 (see Pl.IX:8)]. Now, Mallowan's excavations in area H. H. at Tell Brak give a much clearer indication when the results of D. Oates's excavations in area HH at the same site are taken together into consideration [see Mallowan 1947: Pl.LXVII: 15, from level 1 in area H. H.].
11) *Cf.* Weiss *et al.* 1993: p.999ff. for "Ḫabur hiatus 1" phase 3.

excavations also shed a new light on these chronological problems on Khabur ware and Nuzi ware[12]. It is area HH that provides important information. Excavated in this area were the Mitanni palace in which there were two main phases of occupation, the Mitanni temple/shrine, and a series of Mitanni houses (area HH levels 7–2) adjacent to the palace and temple [Oates & Oates 1991: p.158; *idem* 1994: p.172]. The sequence of Mitanni houses (area HH levels 6–2) runs parallel to the palace phases, 1–2. J. Oates says that the final occupation phase, 2, of the Mitanni palace, yielding Nuzi ware, lacks "late" Khabur ware[13], which was found in earlier Mitanni house levels of area HH in large quantity, thus pointing out that this is a very important piece of datable evidence for the end of Khabur ware [personal communication in 1995]. At present, her statement gives the most significant indication for the lower date of Khabur ware: a tablet mentioning Artaššumara and bearing the impression of Saustatar's seal[14], which came from the phase 2 destruction debris of room 3 of the Mitanni palace, provides a *terminus ante quem* for the phase 1 occupation of the Mitanni palace [Oates & Oates 1991: p.158]. In history, Artaššumara is known to have succeeded his father Šuttarna II as king of Mitanni but to have been soon murdered. It was Tušratta who succeeded his brother Artaššumara as king of Mitanni. Tušratta's letters, including one letter written in Hurrain, are well known to be extant in the Egyptian state archives from Tell el-Amarna; his diplomatic correspondence was most concerned with the marriage of Amenophis III to Tušratta's daughter, Tatu-ḫepa. The Egyptian pharaoh Amenophis III also married Šuttarna II's daughter, Kelu-ḫepa, in his tenth year. Thus Artaššumara's brief reign falls in the first quarter of the 14th century B.C.[15] Hence D. Oates and J. Oates suggest a date in the 15th century B.C. for the lower chronological limit of phase 1 of the Mitanni palace [1991: p.158]. In sum, the absence of Khabur ware in the Mitanni palace phase 2 occupation can be accepted as a *terminus ante quem* for Khabur ware, and we have now been able to have clear evidence, from the core area of Khabur ware distribution, that the Khabur ware fashion terminates before the reign of Artaššumara of Mitanni. Accordingly, a date of *ca.* 1400 B.C., at the latest, can be suggested for the end of Khabur ware.

Chronological evidence for the main phase of Khabur ware

Textural evidence for dating Khabur Ware Period 2 has been so far provided at several sites, including ones outside the main distribution zone of Khabur ware. The evidence, given in the form of cuneiform tablets, is supplemented by inscribed seal impressions datable, which are found on tablets, envelopes of tablets or clay sealings. The following are the sites at which Khabur ware is directly or indirectly associated with datable cuneiform tablets or inscribed seal impressions:

(1) Chagar Bazar

This site is located on the *wadi* Dara, a branch of the *wadi* Khanzir flowing into the *wadi* Jaghjagh which is the only perennial tributary of the Khabur river.

In 1936 tablets were found on the floor and in the rubbish of the large building of area B.D., and in the ashy debris of the badly-preserved building of area A.B. [Mallowan 1937: p.113, p.115 and p.154]; and M.E.L. Mallowan reported that all the tablets occurred consistently at the bottom of Khabur ware level 1, giving a *terminus post quem* of *ca.* 2000 B.C. for the level [1937: p.94]. In 1937, in area T.D. some nine rooms of a building belonging to the early phase of level 1 were excavated, one of which, room 106, contained numbers of tablets including ones bearing the name Iasmaḫ-Adad (son of Šamši-Adad I) [Mallowan 1947: pp.81–82; Gadd 1940: pp.22–23]. Some tablets bore the impressions of seals with inscriptions describing each one of their owners as "servant of Šamši-Adad" [Gadd 1940: see p.20, and *e.g.* A.939 on p.50]. All the tablets found were thus regarded as having been written in the time of Šamši-Adad I, king of Assyria (*ca.* 1813–1781 B.C. on the middle chronology) [Gadd 1940: p.22]. On the ground of the texts mentioning the name of the younger son of the Assyrian king, Mallowan rectified his previous view and, using Smith's middle chronology, dated the beginning of level 1, *i.e.*, the first

12) A time range for Nuzi ware at Tell Brak will be elucidated by D. Oates and J. Oates.

13) See also J. Oates 1990: p.146.

14) As for the name of the famous Mitannian king, there are the following variants: Sauštatar, Šaušattar, Saušatar, Saušsatar, Sauššattar, and Šauššatar.

15) See Goetze 1975: pp.3–4.

appearance of Khabur ware at this site, at *ca.* 1800 B.C. [Mallowan 1947: p.83].

Although Khabur ware from the tablet building of area T.D. is not illustrated in the report, the association in the building of Khabur ware vessels and the tablets is naturally presumed. The significant fact is, however, that many of the tablets, found in ash on the beaten mud floor of room 106, "were resting on potsherds which had evidently once served as trays", some of which "were sherds of coarse Khabur ware painted with red stripes" [Mallowan 1947: p.82]. This shows the direct association of the Khabur ware sherds with the tablets.

Of interest are tablets dated by *limū* (year-eponyms). The majority of the Chagar Bazar tablets bear a *limu* name, *i.e.*, Adad-bani [Gadd 1940: p.23]. The *limu* is attested at Mari and Alişar Hüyük, which is considered as falling in the reign of Šamši-Adad I [Veenhof 1985: p.204 and p.216]. This is also a matter of significance, because of one of the key points for dating the tablets from Kültepe *Karum* Ib, which is noted below.

(2) Mari (modern Tell Hariri)

This famous site is located about 11 kilometres northwest of Abu Kemal in Syria.

A certain Khabur ware jar was discovered in room 162 of the north-eastern quadrant of the Mari royal palace [Parrot 1959: pp.133–134, and Fig. 92:c or Pl.XXXVI:1584], which produced more than 20,000 cuneiform tablets, written in Old Babylonian mainly in the times of Iaḫdun-Lim, Iasmaḫ-Adad and Zimri-Lim. Unfortunately this room is not directly associated with any of the tablets discovered. Further, it has been confirmed that the palace was constructed in several stages with many additions and functional changes, thus having a long history from the third to the early second millennium B.C. [Pardee 1984: p.89; Kohlmeyer 1985: p.195]. Accordingly, one may assume that the room in which the Khabur ware jar was found belongs to an earlier part of the palace, and therefore would have perhaps been used by Iasmaḫ-Adad in the time of Šamši-Adad I [Hrouda 1971: pp.167–168]. However, the stratigraphic provenance of the Khabur ware jar is obscure, and ceramics recovered from the palace is likely to represent the final material at the time when Mari was destroyed by Ḫammurabi of Babylon. Thus it is now most appropriate that the Khabur ware jar of Mari is regarded as dating from the time of Zimri-Lim, king of Mari.

The Mari texts provide not only information for early second millennium history but also comparative data for the study of Assyrian *limu* lists.

(3) Kültepe (ancient Kaniš)

Kültepe-Kaniš, located about 19 kilometres north of Kayseri in Turkey, consists of the main city-mound and the lower terrace area where a *karum* existed in the Old Assyrian period.

In the Middle Bronze Age palace on the city-mound, the dagger of Anitta was discovered; in a Middle Bronze Age building on the same mound, tablets including the Anum-ḫirbi letter were found [Orlin 1970: pp.214–215]. The dagger and the letter were considered contemporary with level Ib of the terrace area [Orlin 1970: p.100, p.213 and p.238]. On the terrace area, four main occupation levels were confirmed, which were designated *Karum* I-IV from top to bottom. *Karum* level I consisted of three phases (Ia, Ib and Ic). Among these levels, *Karum* II and *Karum* Ib produced thousands of tablets written in Old Assyrian and concerned chiefly with Assyrian trading activities. *Karum* Ic, intervening between II and Ib, was a level of no occupation, during the period of which the *karum* area had been temporarily uninhabited [Orlin 1970: p.200 and pp.210–211].

Relevant to the matter of Khabur ware is the *Karum* Ib settlement, the tablets from which are however much smaller than those of *Karum* II in quantity. From Kemal Balkan's study of *limu* names occurring in the Kültepe texts, this level, Ib, was dated to the time of Šamši-Adad I [Balkan 1955: pp.43–44]. The points of Balkan's study regarding the Ib texts are that there is a similarity in style between the Ib texts and the Alişar texts in which, as at Chagar Bazar and Mari, the occurrence of the *limu* Adad-bani is well attested, and that in a tablet assigned to Ib occurs the name Awilia, which is mentioned as a *limu* in another Kültepe tablet, and which is thus identifiable with the *limu* Awelia (Aweliya) or Awilia (Awiliya) attested at Chagar Bazar and Mari respectively [Balkan 1955: pp.42–44, and see p.47 and n.8 on p.65]. Balkan regarded Adad-bani and Awilia as *limu* officials of Samis-Adad I for the reason that they appeared in the texts, dated to the time of the Assyrian king, of Chagar Bazar and Mari.

At Kültepe, a few small vessels of Khabur ware came from graves regarded as belonging to *Karum* Ib, thus dated to the reign of Šamši-Adad I [T. Özgüç 1953: p.115, and Abb.17/25 and Abb.18/26; Emre 1963: p.95 and Pl.XXV:1; T. Özgüç 1986: pp.29–93 and Pl.134:3]. The evidence from seals, however, shows that *Karum* Ib may have lasted much longer than the reign of Šamši-Adad I, covering the reign of Ḫammurabi of Babylon (*ca.* 1792–1750 B.C. on the middle chronology) [Buchanan 1969: p.759; *cf.* N. Özgüç 1968: p.319].

(4) Tell al-Rimah (probably ancient Karana)

This site, yielding numbers of Old Babylonian tablets, deserves our attention as a site providing well-stratified materials including a good Khabur ware assemblage. The pottery sequence confirmed at the site will certainly provide an important clue to the study of Khabur ware when the details are reported. Unfortunately, most of the ceramic materials including the Khabur ware assemblage have not yet published. But the published reports give us the details of stratigraphy, noting important points of

materials recovered.

The site, situated 13 kilometres south of Tell 'Afar in north Iraq, consists of a central mound and the area surrounded by city wall remains. One of the main excavation areas is Area A, on the central mound, which is also called the temple site; another is Area C, also called the palace site, between the central mound and the city wall remains.

The palace of area C divided into three main structural phases (1–3), of which the latest phase, 3, was further divided into two subphases of occupation, 3a and 3b [D. Oates 1972: p.78 and p.85; *idem* 1976: p.xi]. The building of phase 1 confirmed was that marked by "a three-room suite with mud-brick walls on massive stone foundations trenched into virgin soil" [D. Oates 1976: p.xi; *idem* 1982c: pp.88–89]. Additions made to the phase 1 building was marked as phase 2, in which there was no substantial changes [D. Oates 1976: p.xi; *idem* 1982c: p.89]. The phase 3 building, which had replaced the phase 1 building with additions of phase 2, was the palace taking its final form by rebuilding [D. Oates 1972: p.85].

A number of tablets were found on or below the floors of phase 3b [D. Oates1976: p.xi]. Many of these tablets derived from two archives found in room II and room VI [D. Oates 1968a: p.136]. The tablets of room II were part of the archive of Ḫatnu-rapi placed in phase 3a in historical contexts; the tablets, large in number, of room VI were the famous archive of "Iltani", which were evidently associated with phase 3b [D. Oates 1976: p.xiii]. From the Rimah texts themselves and in the connection of the Mari texts, Ḫatnu-rapi is known as a contemporary of Zimri-Lim of Mari and, supposing the identification of Rimah with Karana is correct, is recognized as ruler of the city [Dalley 1976a: p.1 and pp.4–6; *idem* 1984: pp.37–38]. Iltani is known, from the inscription reconstructed from impressions of her seal, to have been the wife of Aqba-ḫammu, who, being connected with Karana in the Mari texts, is inferable as ruler of the city, and who, according to the inscription of one of his two seals and some texts from room VI, is known to have been subject to Ḫammurabi of Babylon [Dalley 1976b: pp.31–32 and p.35; *idem* 1984: pp.39–44]. In addition to the occurrence of the place-name Kaniš, it is worth noting that the *limu* Ṣabrum frequently occurs in the economic texts of the Iltani archive: the *limu* name, though with no patronymic, is most likely identical with the *limu* Zaprum (*i.e.* Ṣaprum), son of Puzur-Sin, attested in the *Karum* Ib texts of Kültepe, in postulating that *Karum* Ib continued to the latter part of Ḫammurabi's reign [Dalley 1976b: p.31]. This suggests a chronological link with Kültepe *Karum* Ib [D. Oates 1968a: p.137; Dalley 1976b: p.32]. Inscribed seal impressions, found on or below the floors of phase 3b, revealed the names of five rulers, including the two rulers mentioned above, which were derived either from their own seals or from those of their servants. Among the rulers, Šamši-Adad I and Samu-Addu are relevant to the matter of dating the beginning of the palace. Samu-Addu was the father of Iltani, which is a fact derived from Iltani's seal, noted above; according to the Mari texts, he was king of Karana when Iasmaḫ-Adad was present at Mari [Dalley 1976a: p.4; *idem* 1976b: p.33 and p.35]. From the Mari texts, Samu-Adad is considered a vassal king under Šamši-Adad I [Dalley 1984: p.36 with n.13; D. Oates 1982c: p.89]. The earliest chronological evidence was further obtained in the form of inscribed seal impressions on clay envelope fragments, which came from in debris on a lower level which might have been either the construction level or the floor of the phase 3a building [D. Oates 1972: pp.85–86]. They were the impressions of two seals with inscriptions describing each one of their owners as "servant of Šamši-Adad" [D. Oates 1972: p.85; *idem* 1976: p.xi]. D. Oates considers that these impressions "might thus be associated either with the destruction of the phase 1 building or the first occupation of the palace that replaced it", suggesting that "they can be regarded only as proof that the site was built on during Šamši-Adad's reign" [D. Oates 1972: p.86]. At any rate, these pieces of evidence, together with the evidence for Aqba-ḫammu's connection with Ḫammurabi of Babylon, were regarded as suggesting that the time range of the palace sequence extends from Šamši-Adad's reign to the latter part of Ḫammurabi's reign [D. Oates 1972: p.86; *idem* 1982c: p.89]. Important is D. Oates's brief mention, which indicates that the pottery of the palace period is Khabur ware [D. Oates 1976: p.xiii]. The Khabur ware of the palace is thus dated from the time of Šamši-Adad I. Another important point is that in a later building overlying the palace abandoned, the so-called "late Khabur/early Nuzi" type pottery occurs, consisting of vessels painted in a style intermediate between Khabur ware and the painted wares of mid-second millennium northern Mesopotamia [D. Oates 1972: p.85; *idem* 1976: p.xiii]. This suggests that the Khabur ware occurrence that is assigned to the main Khabur ware phase defined in the present article is confined to the palace sequence in area C.

On the other hand, phase III of area A, in which a monumental temple complex marked by two stages of construction was retrieved, also yielded Khabur ware [D. Oates 1965: p.71; *idem* 1970: p.11]. According to D. Oates, "late Khabur painted ware" was included in large quantities of pottery and bones lying on two later floors of room XXI of the temple [1967: p.83]; this suggests that the occupation of the temple extends in time after the main Khabur ware phase defined in the present article. Tablets were found in rooms II and XVII of the temple, and on the south side of the head of the stairway leading up to a terrace fronting the main, east gate of the temple [D. Oates 1968a: pp.119–122; *idem* 1970: p.11]. But these tablets provide no more datable evidence than they are of Old Babylonian date [Dalley 1976c: p.165]. However, D. Oates suggests, on the ground of historical probability, that "the original phase of construction of the temple should be ascribed to the period of Šamši-Adad's domination" [1976: p.xv; see also 1982c: pp.91–92]. He further argues that this is supported by the mention of a "governor (*šapiṭum*)" in the tablets from the stairway area, in postulating their contemporaneity with the tablets from the earliest occupation of room II of the temple [1976: p.xv]. The tablets of the stairway area came from in the debris associated with a flimsy building earlier than the stairway and from in the foundation trench of a massive wall, regarded as the retaining wall of the

temple terrace, by which the debris of the earlier building had been disturbed [D. Oates 1970: pp.10–11; *idem* 1976: p.xv]. This suggested that they had been stored in the flimsy building, considered to have stood for a time outside the east façade of the temple [D. Oates 1976: p.xv]. The stratigraphic connection between the stairway area and the building of the temple itself, however, was unclear because of erosion destroying the area between them [D. Oates 1970: p.11]. Only the occurrence of the personal name Allašarum both in the room II texts and in a list from the stairway area suggested a possible chronological link between the two groups of tablets [D. Oates 1976: p.xv; Dalley 1976c: p.163]. It is interesting to note that the texts from the stairway area provide *limu* names, one of which is the *limu* Aḫiyaya, which, though with no patronymic, is most probably identified with the *limu* Aḫiyaya in the Chagar Bazar texts and the *limu* Aḫiyaya, son of Takiki, in the Mari texts [Hawkins 1976: p.200 with n.14 and p.201]. The *limu* Aḫiaya, son of Takiki, is also attested in the *Karum* Ib texts of Kültepe [Veenhof 1985: p.198].

Khabur ware also occurs in levels underlying the phase III temple, which was substantially confirmed through soundings carried out in an area on the south side of the central mound (area AS). This is concerned with the earliest phase of Khabur ware, *i.e.*, Khabur Ware Period 1.

(5) Tell Taya

In the citadel mound of this site, lying on the lower slopes of a range of hills at the northeastern corner of the Tell 'Afar plain in north Iraq, levels IV and III yielded Khabur ware [Reade 1968: p.257; *idem* 1982a: p.74]. The upper level, III, produced two tablets bearing seal-impressions inscribed with "Ḫasidanum, son of Anzanum, servant of Šamši-Adad" [Postgate 1973: p.173]. Ḫasidanum is known from the Mari texts as governor of Karana [Postgate 1973: p.173], and is regarded as a provincial official who supervised Karana and took the responsibility of watching vassal kings and reporting to Iasmaḫ-Adad at Mari during the reign of Šamši-Adad I [Dalley 1984: n.13 on p.48]. Thus this site is historically tied in with Tell al-Rimah, which is most likely identified with the city of Karana.

The dating of level III by the tablets raises the possibility that the lower level, IV, is dated before the reign of Šamši-Adad I, from a stratigraphic point of view. As at Tell al-Rimah, this is also supported by ceramic evidence from level IV itself, and is thus relevant to Khabur Ware Period 1.

(6) Tell Leilan (ancient Šubat-Enlil)

The site, lying on the left bank of the *wadi* Jarrah in the upper Khabur basin of Syria, consists of the main mound called the acropolis and the lower town area enclosed with city wall remains.

The acropolis-northeast excavations revealed three building levels (I–III) producing Khabur ware, of which the second level (II) was marked by monumental temple architecture which was a rebuilding of the original temple of the lowest level (III) confirmed [Weiss 1985a: pp.7–13]. Building level I, immediately under the surface of this excavation area, was represented by the remains of a mud-brick platform, and hearths [Weiss 1985a: p.7; *idem* 1985b: p.281]. The façade decoration of the building level III temple is said to be directly comparable with that of the Tell al-Rimah temple. The phase producing Khabur ware is designated as "Leilan period I".

In the first three seasons of excavation, tablets and clay sealing fragments with seal impressions were recovered from several rooms of the building level II temple. The tablets were for the most part economic documents, some of which were dated with *limū* [Weiss 1985b: p.281]. The *limu* Adad-bani, with a patronymic, occurs on a tablet found on a floor of a room of the level II temple, which was previously regarded as identical with, but is now differentiated from, the one known from Mari, Chagar Bazar and Alişar Hüyük [Whiting 1990a: p.572 with n.108; *idem* 1990b: p.188]. This Adad-bani is described as son of Pussaya, but the Adad-bani known from Mari, as son of Puzur-ili [Whiting 1990a: p.572; *idem* 1990b: p.188]. The tablet dated by the *limu*, however, bore the impressions of the seals of two different servants of Šamši-Adad [Whiting 1990a: p.572 with n.109; *idem* 1990b: p.188]. The significant fact is that Khabur ware was found on floors of the level II temple [Veenhof 1985: p.201, based on H. Weiss and B.R. Foster's information]. On the other hand, among the clay sealings from the building level II temple, there was one sealing bearing the impression of a seal with the inscription of "Ṣuri-Adad, son of Zidriya, servant of Šamši-Adad" [Weiss 1983: p.60; *idem* 1985a: p.14; *idem* 1985b: p.281]. Other inscribed seal impressions, recovered from there, revealed the names of two rulers, Turum-natki and Ḫaya-abum, which were derived from the seals of their servants; their names are known from part of the Mari texts, those letters which document the history of Šubat-Enlil after the death of Šamši-Adad I [Weiss 1983: p.63 and see Fig. 7; *idem* 1985b: pp.283–284 and see Fig. 3]. The fact that after Šamši-Adad came Turum-natki and Ḫaya-abum is also confirmed from the archaeological context of the finds, *i.e.*, the spatial and temporal distribution of the inscribed seal impressions in the level II temple [Weiss 1983: p.60; *idem* 1985b: p.283]. From these pieces of evidence, Harvey Weiss concludes that the building level II temple was "in use during the reign of Shamshi-Adad, and/or possibly shortly thereafter" [Weiss 1983: p.58 and p.63; *idem* 1985b: p.281 and p.283].

In addition to these, the excavations also confirmed one important tablet from the building level III temple [Weiss 1983: the table on p.60; *idem* 1985b: the table on p.281]. On the tablet, the *limu* Sin-muballiṭ occurs [Whiting 1990a: p.571 with n.97–100]. This *limu* is attested in the *Karum* Ib texts of Kültepe and at Mari [Veenhof 1985: p.204]. The tablet was found in the brick collapse of the level III temple, below the floor of the level II temple; the pottery from the destruction debris

included Khabur ware [Veenhof 1985: p.201, based on Weiss and Foster's information]. On the other hand, building level I did not provide any epigraphic evidence. On surfaces related to the level I mud-brick platform were sherds of Khabur ware and associated pottery, similar to the Khabur ware assemblages of building levels II and III [Weiss 1985a: p.7; *idem* 1985b: p.281].

What should be noted here are some examples of painted pottery said to be from building level II or III of the acropolis-northeast area, which are illustrated in a report published in 1985 [Weiss 1985a: p.13]. The illustration of the 1985 report includes one example, with a small ring base, of the "band-painted, eversible-necked/rimmed shoulder cup" type, *i.e.*, one type of Hrouda's "*jüngere*" Khabur ware (Fig. 1:22), and two examples, with distinctive bird motifs, of the "straight/concave-sided beaker" type (Fig. 1:26, 27) [Weiss 1985a: the illustration on p.13]. This corroborates the earlier occurrence of the type that Hrouda described as one of his "*jüngere*" Khabur ware, as does evidence from Kültepe and possibly Dinkha Tepe, sites outside the main distribution zone of Khabur ware [*cf.* T. Özgüç 1953: Abb.17 or 25 and A. Stein 1940: Pl.XXIX:12] (see Fig 1:24, 28). Examples of this type occurring in the main phase of Khabur ware have exclusively small ring bases, while examples of the type occurring in later Khabur ware phases have predominantly button and small footed pedestal (footed button) bases. Problematical are the two "straight/concave-sided beaker" type vessels decorated with stylized dark-painted birds, because they are considered diagnostic for later Khabur ware phases. In this repect, their stratigraphic attribution to building level II or III is now questioned; we are awaiting a published report on their exact stratigraphic provenance. Now that these vessels, as well as the shoulder cup type, are considered as belonging to the category of Khabur ware, their provenance carries weight in elucidating the sequence of Khabur ware from a chronological point of view. If the beaker type vessels with bird motifs can be no doubt attributed to II or III, a different picture will emerge regarding the chronology for the sequence of Khabur ware.

Furthermore, in the 1985 season of excavation, the substantial corpus of cuneiform texts was revealed in the acropolis-northeast area. These tablets were those dumped in/on a deposit of ash and trash on the floors of the rooms of the so-called "squatter occupation", which was set upon the collapsed walls of the building denoted as building level "X", possibly a southern portion of the building level II temple [Weiss 1990: pp.540–542]. Weiss reports that the ceramic assemblage from building level "X" is part of the Khabur ware assemblage of the building levels II and III temples [Weiss 1990: p.542]. The texts were administrative documents, which were dated by *limū* from the reign of Šamši-Adad I [Weiss 1990: p.541]. Among the *limū* attested, there was the *limu* Pussaya; the tablets dated with this *limu* bore the impressions of seals with inscriptions describing their respective owners as "servant of Šamši-Adad", "servant of Išme-Dagan" and "servant of Iasmaḫ-Adad" [Whiting 1990a: p.569 and see Table 2 on p.576]. The occurrence of the *limu* Sin-muballiṭ was confirmed on one tablet, which might be identical with the one from the building level III temple, noted above [Whiting 1990a: p.572; *idem* 1990b: p.185]. One sealing, recovered from the secondary garbage deposit, bore the impression of the seal of "Ṣuri-Adad, servant of Šamši-Adad" [Parayre 1990: no.5 on p.559; see also Whiting 1990a: Table 2 on p.576]. Of interest is a sealing of a servant of Daduša, found in the same garbage deposit; this Dadusa is regarded as identical with the king of Ešnunna, who died five years before the death of Šamši-Adad I [Whiting 1990a: p.571; see Parayre 1990: no.7 on p.559].

Besides the excavations of the acropolis-northeast area, the excavations in the lower town area (operation 3) produced a large group of Old Babylonian texts. The 1985 excavations of operation 3 confirmed three building levels (1–3) associated with the Khabur ware ceramic assemblage of Leilan period I [Akkermans 1990: pp.543–547]. The level 2 and level 3 buildings were considered as representing two phases of the palace of this site during Leilan period I [Akkermans 1990: p.547; Akkermans & Weiss 1987–88: p.91ff.]. The 1987 excavations of operation 3 further confirmed part of a building standing on the level 3 building but somewhat earlier than it, which, also belonging to period I, was labelled as building level 4 [Akkermans & Weiss 1987–88: pp.91–92]. The fill on the floors of two rooms of the level 4 building produced sealings of servants of Šamši-Adad and Išme-Dagan [Akkermans & Weiss 1987–88: p.92]. Building level 3 yielded a few tablets and many sealings, as well as the Khabur ware assemblage of period I [Akkermans 1990: pp.545–546; Akkermans & Weiss 1987–88: p.93]. Building level 2, which had been rebuilt almost in the same plan as that of the level 3 building, also yielded many tablets and sealings [Akkermans 1990: pp.546–547; Akkermans & Weiss 1987–88: pp.94–95]. Building level 1 was marked by a small mud-brick wall and several pits underlying below the modern surface of this area; one of the pits contained a small Khabur ware jar decorated with bird motifs [Akkermans 1990: p.547]. Inscribed seal impressions on tablets and sealings from building levels 3 and 2 in the lower town area revealed the following names of rulers; Šamši-Adad, Ḫimdiya, Mutiya, Till-abnu, and Iakun-ašar. From the Mari texts, Ḫimdiya is known as having succeeded Atamrum, king of Andariq, shortly before the time when Ḫammurabi of Babylon smote Mari in battle in his 32nd regnal year (*ca.* 1761 B.C.) [Eidem 1987–88: p.111]. Judging from the texts from the lower town area of Leilan, the last rulers who controlled this city after Ḫimdiya were Mutiya, Till-abnu and Iakun-ašar in their successional order posited [Eidem 1991: pp.114–115]. The textural evidence and the archaeological contexts of the finds, at least, suggest that the rooms labelled as level 4 were in use during the time of Šamši-Adad I, and that in the level 2 palace, a rebuilding of the level 3 palace, Iakun-ašar was finally resided [*cf.* Akkermans & Weiss 1987–88: p.96].

Important in connection with the texts from the lower town area is a proposal put forward by Dominique Charpin [1987]. Of the proposal, based on unpublished texts from Mari and information from Tell Leilan, the points are that the original name of this site was Šeḫna, a city-name attested in late third millennium tablets from Tell Brak, before Šamši-Adad occupied the city

and renamed it as Šubat-Enlil, and that the name Šeḫna, also referred to in Zimri-Lim's texts from Mari, gradually came into use again after the death of Šamši-Adad [Whiting 1990a: pp.574–575; Eidem 1987–88: p.110; Eidem 1991: p.110]. Most important is a chronological link with southern Mesopotamia, shown in the proposal. The seal of Iakun-ašar, king of Apum, was found on tablets from room 2 of the building level 2 palace in the lower town area [Whiting 1990a: p.574, and see Table 2 on p.575]. The Kültepe texts suggest that Apum was a town through which an Old Assyrian trade route passed [Goetze 1953a: p.67; Whiting 1990a: p.574]. In the proposal, however, the fact that Apum was the name of the area around Šehna (= Šubat-Enlil) is shown, which is supported by the Babylonian king Samusuiluna's 23rd date-formula recording the destruction of "Šaḫna (Šeḫna) the capital of the land of Apum", and by a variant version of the date-formula which mentions a certain name most likely identified with the Iakun-ašar, king of Apum, attested at Tell Leilan [Whiting 1990a: p.575; Eidem 1987–88: pp.110–111; Eidem 1991: p.112]. The chronological link with southern Mesopotamia was thus clarified; and the 22nd regnal year of Samsuiluna (*ca.* 1728 B.C.) was considered a terminal date for archaeological and epigraphic materials associated with Iakun-ašar. In sum, the date-formula of Samsuiluna provides a probable *terminus ante quem* for the building level 2 palace of the lower town area of Tell Leilan. Accordingly, the lower limit of the time range of Khabur ware at Tell Leilan itself, which extends from the reign of Šamši-Adad I to the end of the building level 1 of the lower town area, is probably dated shortly after *ca.* 1728 B.C., the date of the destruction of the palace of Iakun-ašar who is now attested as king of the land of Apum the capital of which was Šeḫna (= Šubat-Enlil). However, the presence, in the acropolis-northeast area, of "straight/concave-sided beaker" type vessels with distinctive bird motifs, whose stratigraphic attribution is questioned, suggests that there may be archaeological features assigned to the beginning of Khabur Ware Period 3. If the representation of the bird motifs occurring on a small Khabur ware jar, from a pit immediately below the modern surface of operation 3, is distinctive, and is differentiated from that of bird motifs occurring on earlier Khabur ware vessels, for example, from Tell Billa stratum 4 [Speiser 1933: LXXII], the pit itself can be assigned to Khabur Ware Period 3. The recent confirmation of burials with ceramics said to be close in time to "Nuzi ware assemblages", which are now labelled "Leilan period 0", defined as post-Leilan period I [Weiss 1994: p.126], deserves consideration in this connection.

(7) Terqa (modern Tell 'Ashara)

This site, on the Euphrates river, is located about 60 kilometres north of Mari. Before the discovery of the Mari archives, tablets from this site were well known to Assyriologists as the Khana texts, dated to the second quarter of the second millennium B.C.

During the first two seasons of excavation, the occurrence of Khabur ware at this site was not confirmed [Kelly-Buccellati & Shelby 1977: p.11]. But later excavations, carried out in area F, confirmed the occurrence of Khabur ware in the form of potsherds [Buia 1993]. The sherds of Khabur ware found in this area were, however, few in number.

The area F excavations, providing epigraphic evidence, have so far confirmed nine phases. In phases 4–7, Khabur ware sherds were found. The number of the Khabur ware sherds recovered totalled 15 or 16; one from a phase 6 fill, two from a phase 5 floor, one from a phase 6 fill, and eleven or twelve from a phase 7 fill [Buia 1993: Tables 21–24 on pp.177–180]. Daniela Buia, who studied the pottery from this area, considers that phase 4 corresponds to a possible Old Babylonian occupation at Terqa immediately after Ḫammurabi's having destroyed Mari [1993: p.30]. Further, Buia assigns phase 5 to the "late Mari period", the period in which Kibri-Dagan was present at Terqa as a governor under Zimri-Lim of Mari, and phase 6, to the "early Mari period", the so-called Assyrian "interregnum" at Mari [1993: pp.31–32 and pp.38–39]. It is said that among the epigraphic finds from area F, there are two tablets assigned to phase 5 [Buia 1993: p.8]. Of importance is the fact that a tablet bearing a month-name associated with Šamši-Adad's reign was found in a room of a structure of phase 6, to which tablets from the so-called "scribal installation" were also assigned [Buia: p.8 and pp.39–43]. Furthermore, Buia assigns phase 7 to the time of Iaḫdun-Lim of Mari, in that there was found a tablet bearing his name, which may be assigned to phase 7 if tentatively [1993: pp.8–9 and p.47].

Accordingly, phase 6, yielding one Khabur ware sherd, probably falls in the reign of Šamši-Adad I. What matters is phase 7, tentatively assigned to the time of Iaḫdun-Lim. This tentative assignment suggests that phase 7, yielding eleven or twelve Khabur ware sherds [see Buia 1993: Fig. 195:b-c, e], can be dated before Šamši-Adad's defeating Iaḫdun-Lim. In other words, it is suggested that phase 7 may be assigned either to the early period of Šamši-Adad's reign, at the latest, or to the period shortly before the accession of Šamši-Adad, at the earliest. The latter is on the assumptions that the accession of Iaḫdun-Lim at Mari precedes that of Šamši-Adad at Aššur, and that Iaḫdun-Lim's earlier career is concerned with Terqa [see Veenhof 1985: p.207 with n.56, for Iaḫdun-Lim].

Given that the Khabur ware sherds of phases 4–6 are not stray finds coming from phase 7, a time-span for the occurrence of Khabur ware at this site itself thus extends from some time during the time of Iaḫdun-Lim to a date immediately after the reign of Zimri-Lim at Mari.

(8) Tell Bi 'a (ancient Tuttul)

The site lies near Raqqa, a modern city of Syria, and is located also near the mouth of the Balikh river.

Through the 1987–1990 excavations, sherds of Khabur ware, though few in number, were discovered [Strommenger

1991: Abb.5; Einwag 1993: Abb.9:1,2]. The Khabur ware sherds were those recovered from a burial place containing a number of superimposed human skeletons [Strommenger 1991: pp.13–15]. The dead bodies, amounting to about eighty, had been for the most part thrown in and over part of the remains of an underground structure in a room of a building called the "late palace" [Strommenger 1991: pp.12–15 and see Abb.4; Einwag 1993: p.33]. Berthold Einwag suggests that parts of broken Khabur ware vessels were likewise thrown in [1993: p.44]. Eva Strommenger considers that the burial suggests that there was a battle [1991: p.15]. The underground structure was considered a tomb, constructed in the course of the use of the "late palace", which had been however robbed by the time when the dead bodies had been thrown in [Strommenger 1991: pp.12–13; Einwag 1993: p.33]. In an ashy layer overlying the burial place, tablets dated by *limū* to the reign of Šamši-Adad I and seal impressions were found [Strommenger 1991: p.15; Einwag 1993: p.40]. A level, in which the "late palace" had been reused and which was associated with the burial place, also produced similar tablets and a quantity of unpainted pottery [Strommenger 1991: p.33]. The 1992 excavations confirmed tablets dating to the time of Šamši-Adad I from this level [Einwag 1993: n.1 on p.40; *cf.* Strommenger 1994: p.144].

These suggest a possibility that the occurrence of Khabur ware at this site may be dated to the reign of Šamši-Adad I.

The dates of the main phase of Khabur ware

The beginning of the main phase of Khabur ware (Khabur Ware Period 2) is dated to the reign of Šamši-Adad I on the epigraphic evidence from Chagar Bazar, Tell al-Rimah, Tell Taya and Tell Leilan. The association, at Kültepe, of graves containing a few examples of Khabur ware with the *Karum* Ib level yielding the texts assigned to the reign of Šamši-Adad I conforms to this. Tell Bi'a, though yielding only a small quantity of Khabur ware, also provides the datable evidence, which suggests that the occurrence of Khabur ware at the site falls in Šamši-Adad's reign. At Terqa, yielding a small number of Khabur ware sherds, the introduction of Khabur ware to the site may possibly fall in the time of Iaḫdun-Lim of Mari; there is thus a possibility that Khabur ware was introduced to Terqa towards the end of Khabur Ware Period 1: but it is likely that the introduction falls between the accession, at Aššur, of Šamši-Adad I, a usurper on the throne, and the time when Iaḫdun-Lim was defeated by Šamši-Adad I. At any rate, the introduction of Khabur ware to Terqa before Šamši-Adad's defeating Iaḫdun-Lim which resulted in his conquest of Mari seems to suggest that Khabur ware came to some extent into vogue in the upper Khabur basin before Šamši-Adad's establishing a new capital called Šubat-Enlil and his controlling the upper Khabur region entirely. In terms of political history, we are inclined to assign the beginning of Khabur Ware Period 2 to the date of the establishment of his resident capital Šubat-Enlil at Tell Leilan, from which onwards Khabur ware obviously reached its florescence. However, the date when Šamši-Adad established Šubat-Enlil remains uncertain. Accordingly, a date of *ca.* 1813 B.C., the first regnal year of Šamši-Adad I at Aššur, is tentatively suggested for the beginning of Khabur Ware Period 2. This also enables us to see Khabur Ware Period 1 from the point of view of pre-Šamši-Adad I.

The epigraphic evidence from the Rimah area C palace indicates that Khabur ware continued in use at the site certainly until the time of Aqba-ḫammu who was subject to Ḫammurabi of Babylon; and the stratigraphic evidence from the same area suggests that a new type or style of pottery appeared some time after the abandonment of the palace, probably after the reign of Ḫammurabi. The Leilan operation 3 epigraphic evidence connected with the 23rd date-formula of Samsuiluna of Babylon, together with the stratigraphic evidence, indicates that Khabur ware lasted at the site shortly after a date of *ca.* 1728 B.C., the 22nd year of Samsuiluna, *i.e.*, until the end of "Leilan period I". Some pieces of ceramic evidence from the acropolis-northeast area and the lower town area of operation 3 at Leilan tempt us to assume that a change in style of pottery occurs towards the end of "Leilan period I". A possible date is thus suggested for the end of Khabur Ware Period 2, which is *ca.* 1700 B.C.

The distribution of Khabur ware in its main phase

In the main distribution zone of Khabur ware, consisting of areas within the upper Khabur basin of Syria and northern Iraq, the painted pottery style predominates and associated pottery similar in most respects

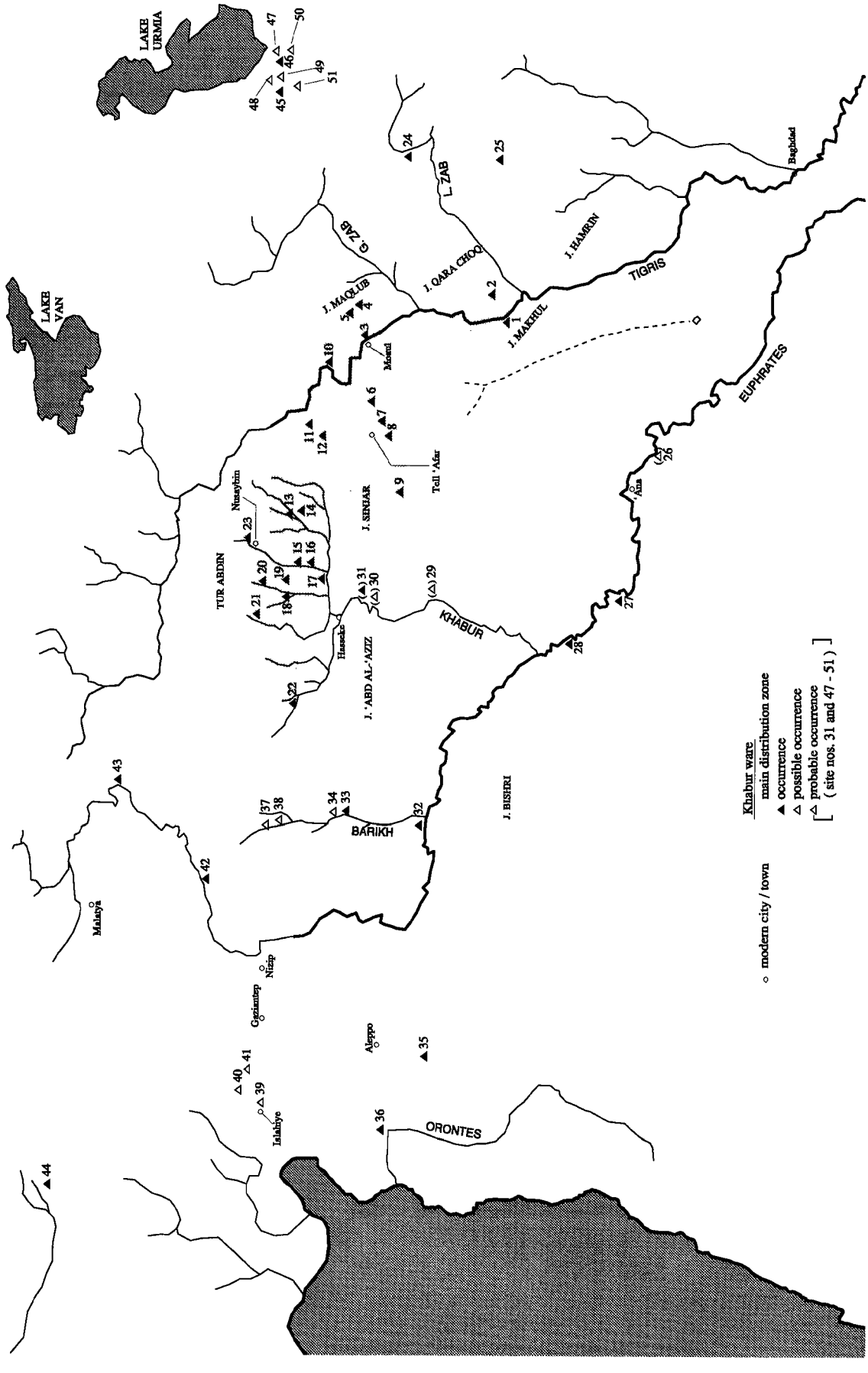
occurs. Sites which we can call "Khabur ware" sites lie in the main distribution zone; on the other hand, sites producing Khabur ware and belonging to the secondary distribution areas may be described as "peripheral" sites (Fig. 2). In most of the secondary distribution areas, the occurrences of Khabur ware are few and the majority of ceramics are in many respects different from those ceramics which occur in the main distribution zone. In some secondary distribution areas, Khabur ware occurs to some extent in quantity, but the ceramic assemblage of each area essentially differs from that of the main distribution zone.

(1) The main distribution zone

This zone, in which Khabur ware occurs abundantly, consists of areas west and east of the Tigris river. The west areas are (a) the upper Khabur basin excluding its southwest part along the Khabur river, and (b) the northeastern Jazira covering i) the area extending from the northern hills of Tell 'Afar northwards and northeastwards to the Tigris, ii) the plain south of Jebel Sinjar and Tell 'Afar, and iii) the corridor linking the 'Afar plain with the river valley north of Aššur. The east areas are (c) the area east of the Tigris upstream of Nineveh, and (d) the southwest part of the Makhmur plain bordered to the north by the Greater Zab river, the east by Jebel Qara Choq, and the south by the Lesser Zab river. The west boundary of the distribution zone lies certainly at the site of Tell Fakhariyah on the outskirts of Ras al-'Ain; but the distribution does not reach to the upper Khabur river except at Tell Fakhariyah, because no Khabur ware occurs along the upper Khabur downstream of the site [J. Oates, personal communication in 1995; see Lyonnet 1991: pp.697–698]. It seems that in the northwestern area and the northern vicinities of Hasseke, no Khabur ware also occurs [see Seeden & Wilson 1988: pp.174–187 for Tells Zaghan, Hwesh and Nustell; Bounni 1990: pp.23–27 for the Hasseke Dam Project area including Nustell, and *cf.* p.28 (?); Lyonnet 1992: p.107 for Tell Bezari, and *cf.* Fig. 10 (?)]. The northern boundary of the zone is defined by the arching line formed by sites along the Syrian-Turkish border and sites of the Eski Mosul Dam Salvage Project area. In the east, the main distribution is not beyond Jebel Bashiqa lying west of Jebel Maqlub; Tell Billa is situated at the foot of Jebel Bashiqa. South of the area around Nineveh, Khabur ware seems not to occur: for example at Nimrud located about 35 kilometres southeast of Nineveh, there are only the ruins of a Middle Assyran town founded on the remains of an early third millennium village, besides Late Assyrian buildings [D. Oates 1968b: p.42; see also D. Oates 1982c: p.86 and Reade 1982b: p.99]. In an area extending beyond the Tigris southwestwards from Nimrud, Khabur ware also seems not to occur; this area can be represented by the prehistoric site of Hassuna, and is bounded by hills, ranging north of Tell 'Afar, which also form a boundary of the Khabur ware distribution. The southeast boundary of the zone lies at Aššur and Tell Aqrah, a site in the southwest part of the Makhmur plain. On the east bank of the Tigris northeast of Tell Aqrah and 15 kilometres north of Aššur lies Tell Haikal, which may be identified with ancient Ekallatum, an important town in early second millennium history, and which is also said to yield evidence of Late Assyrian occupation [D. Oates 1968b: p.38 with n.5; see also Beitzel 1984: p.32 with n.12]. From a historical point of view and from its location, it is possible that this site produces Khabur ware, if it is Ekallatum. Excepting Aššur, the eastern half of the southern boundary corresponds approximately to the theoretical outer limit for dry-farming, as illustrated by D. Oates and J. Oates [1976: p.111, suggesting the 300 mm average rainfall isohyet, and see Fig. 1; *cf.* Weiss 1986: p.80]. This southern boundary seems to be not beyond the southern vicinities of Tell Heyal (Lloyd's site no.74 [1938]), located some 20 kirometres west of Balad Sinjar. On the other hand, the western half of the southern boundary lies roughly along the *wadi* Radd, confluent near Tell Brak with the *wadi* Jaghjagh flowing into the Khabur river as its only perennial tributary, though actually the marshy land along the *wadi* Radd must be excluded. This boundary is immediately below the 300 mm isohyet, illustrated by Weiss [1986: Fig. 6].

(2) The secondary distribution areas

The sites which yielded little Khabur ware or which yielded Khabur ware to some extent in quantity are distributed peripherally outside the main distribution zone.



See the list of sites yielding Khabur ware, with site nos. corresponding to those on this map, which is shown below.

Fig. 2 Distribution of Khabur ware (*ca.* 1813–1700 B.C.).

(a) Nuzi, located 13 kilometres southwest of Kirkuk (ancient Arrapḫa).
(b) Tell Basmusian, located 5 kilometres south of Tell Shemshara (ancient Šušarra), in the Rania plain.
(c) The Ushnu-Solduz valley (Dinkha Tepe, Hasanlu, *etc.*) of northwest Iran.
(d) Mari and Terqa on the west bank of the middle Euphrates river, to which 'Usiyeh may perhaps be added.
(e) Perhaps Tell Fadghami and Tell Ta'ban in the lower Khabur valley, to which Tell Bdeiri/ Bdēri, where several Khabur ware sherds were found, is not added at the moment on the presumption that in an unexcavated area, there may be a phase which the painted sherds belong to but which corresponds in date to a later Khabur ware phase represented in the main distribution zone of Khabur ware.
(f) Tell Bi'a near the mouth of the Balikh river.
(g) i) The middle Balikh valley (Hammam et-Turkman and Tell Sahlan) and possibly ii) the upper Balikh valley (Sultantepe and Aşağı Yarimaca).
(h) Tell Mardikh-Ebla in inland northwest Syria, which is located about 50 kilometres southwest of Aleppo (ancient Ḫalab, the capital of the kingdom of Iamḫad).
(i) Alalaḫ in the Amuq plain, which is located about 60 kilometres west of Aleppo.
(j) The İslahiye-Gaziantep-Nizip region (a site around Nizip, and possibly Tilmen Hüyük, Gedikli Hüyük and Sakce Gözü).
(k) Lidar Höyük and İmikuşağı on the east bank of the upper Euphrates river.
(l) Kültepe-Kaniš, located about 19 kilometres north of Kayseri, in central Anatolia.

Interpretations of the peripheral distribution of Khabur ware

The isolated occurrences of Khabur ware at the "peripheral" sites certainly show that in some level, there was contact between the main distribution zone and the secondary distribution areas. There is also no doubt that there was much closer and more frequent contact between ethnolinguistic peoples living within the main distribution zone of Khabur ware; an interpretative approach to this problem is another matter of argument, although the present article does not deal with this topic.

Now is the time to give possible explanations for the occurrences of Khabur ware in the secondary distribution areas of Khabur ware. It was Hamlin who hypothesized that the Ushnu-Solduz valley area, in particular Dinkha Tepe, had played a role in the Old Assyrian tin trade network, on the basis of the occurrence of Khabur ware, as well as that of typologically-recognized cermaic parallels to north Mesopotamian types, at Dinkha in period IV [Hamlin 1971: pp.306–307; *idem* 1974: p.132; Kramer 1977: p.105]. The presence of Khabur ware at Kültepe-Kaniš supports to some extent her hypothesis, although its occurrence is very limited. In the case of Kültepe, it is possible that Assyrians, concerned in the trade, sometimes carried with them small Khabur ware vessels with symbolic meanings when moving from Aššur to Kaniš. Thus at Kültepe, Khabur ware occurs only as grave goods symbolizing possessions which the deceased had in life. We can of course suppose that Assyrians, resident in trading outposts, manufactured Khabur ware not only as pottery with symbolic meanings but also for practical use as household commodities. A reason for the occurrences of Khabur ware in the Ushnu-Solduz valley, the Rania plain, the upper Balikh valley, the İslahiye-Gaziantep-Nizip region, and the area along the upper Euphrates river can be given on the basis of such a supposition. The Khabur ware-related sites in these areas are in fact along tin trade routes inferable[16].

However, a certain question is raised regarding the Rania plain, in which no Khabur ware occurs at Tell Shemshara-Šušarra, despite its certain occurrence at Tell Basmusian. As attested in the Shemshara texts, Šušarra was the easternmost outpost of Šamši-Adad's kingdom, at which was a tin depot through

16) See Goetze 1953: p.64ff. For the most recent work, see Beitzel 1992: p.35ff.

which the metal was supplied to Assyria [Larsen 1976: p.88][17]. Do the absence of Khabur ware at Shemshara and its presence at Basmusian reflect functional differences between both the sites, under the control of Šamši-Adad ? There remains an explanatory problem.

The assumption that a southern Zalpa/Zalpaḫ, the seat of a *karum*[18], lay in the middle Balikh valley enables us to give a reason for the occurrences of Khabur ware at the sites of the area in terms of the Old Assyrian trade. The occurrences of Khabur ware at İmikuşağı and Lidar Höyük also lead us to assume that there was a trade route running along the upper Euphrates and reaching to Kaniš via Malatya. Further, the fact that İmikuşağı is sitauted near Ergani, a source of copper, tempts us to suggest that the site may have had a role as an outpost through which copper was brought to Assyria, possibly via Lidar Höyük[19]. Needless to say, copper is an essential substance to make bronze.

On the other hand, the occurrence of Khabur ware at Alalaḫ in level VIII may be connected with Šamši-Adad's political and/or economic interest in the western region: as shown in a text appearing on stone tablets from Aššur[20], Šamši-Adad claimed that he had erected his stele in the land of Laban (Lebanon) on the Mediterranean coast. Historically, it is known that the kingdom of Iamḫad, a supporter of Zimri-Lim, son of the Mari king Iaḫdun-Lim, rivalled Šamši-Adad's kingdom forming an alliance with the kingdom of Qatna (Qatanum) under the rule of the king Išḫi-Adad. Alalaḫ was under the control of Iamḫad, as inferred from the later Alalaḫ level VII texts. In addition, Ebla would have been under the political influence of Iamḫad at that time. Despite Šamši-Adad's interest in the west, the existence of Iamḫad thus made his political expansion into the west difficult. Šamši-Adad, however, may have achieved success to some extent, perhaps in the form of alliance and probably in the form of avoiding Ḫalab itself and its vicinities: Khabur ware occurs not only at Alalaḫ in level VIII but also at Ebla in Mardikh IIIB, assigned to MB II, which shows that there was certain contact between the two sites and the main distribution zone of Khabur ware. At that time, the Rabbeans, known as one of the West Semitic nomadic or semi-nomadic tribal groups, who were called brothers of the Benjaminites/ Iaminites forming a nomadic or semi-nomadic tribal confederacy, controlled an urban-tribal state covering the land of Rabbum on the northern fringe of the Syrian desert, *i.e.*, on the right bank of the middle Euphrates, and were allied with Šamši-Adad's kingdom [Astour 1978: pp.1–3]. This also makes such a presumption possible. But it is not feasible, when the appearances of Khabur ware at Alalaḫ and Ebla are dated to the reign of Iaḫdun-Lim or that of Zimri-Lim at Mari[21]. The precise dating of the introduction of Khabur ware to both the sites remains a problem.

It is a fact that Šamši-Adad's direct territorial control never extended beyond the Balikh valley. If Khabur ware appeared at Alalaḫ and Ebla in the contemporaneous period with the reign of Šamši-Adad, it may be concluded that the occurrences of Khabur ware at both the sites reflect an aspect of Šamši-Adad's economic activities in the west, based on political measures such as alliances. A letter from Šamši-Adad to Iasmaḫ-Adad in the Mari texts (ARMT I: 7), referring to various kinds of wood brought from Qatanum and deposited at Subrum, and further mentioning Šamši-Adad's order to send them to towns in his realm, *i.e.*, Ekallatum, Ninuwa and Šubat-Enlil, shows an aspect of Šamši-Adad's apparent economic interest in the west and his real economic activities.

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17) See also Laessøe 1959: p.88.

18) See Larsen 1976: pp.237–238.

19) *Cf.* Larsen 1976: p.91.

20) See Grayson 1987: p.50 or Luckenbill 1989: p.17.

21) The problem is that both Iaḫdun-Lim and Zimri-Lim are also historically concerned with the west. It is known, from the foundation inscription of the Šamaš temple at Mari, that Iaḫdun-Lim made an expedition to the Amanus mountains and to the Mediterranean coast. It is also known that shortly after the death of Šamši-Adad, Zimri-Lim, maintaining friendly relations with Iamḫad, gained political supremacy over an area extending certainly to the Balikh valley. Accordingly, given that their economic and/or political activities could function in either case as an intermediary between the main distribution zone of Khabur ware and the sites in question, there is no reason to deny a possibility that Khabur ware may have been introduced to both the sites during either Iaḫdun-Lim's reign or Zimri-Lim's reign at Mari.

The presence of Khabur ware at Tell Bi'a-Tuttul is also interesting. Perhaps near to or not far from Tuttul existed Šubat-Šamaš[22], an administrative/military outpost of Šamši-Adad's kingdom. This suggests that the area near the mouth of the Balikh river was strategically important to Šamši-Adad. His well-known campaign in the land of Zalmaqum, the upper Balikh area around Harran (Ḫarranum), was that undertaken for securing against a rebellion a foothold to expand his power into the west. In a sense, his political extension of power into the Balikh valley may be connected with the intention, which he must have probably had, of securing trade routes, on the one hand, to Kaniš and, on the other hand, to the Levant. Karkamiš (Carchemish), ruled by Aplaḫanda, probably entered into an alliance with Šamši-Adad's kingdom. A letter from Šamši-Adad to Išhi-Adad of Qatanum in the Mari texts (ARMT I: 24) tells us that Šamši-Adad organized a coalition against Sumu-epuḫ of Iamḫad, in which the ruler of Karkamiš participated, together with the rulers of Ḫaššum, Uršum and the Rabbeans. Thus the occurrences of Khabur ware in the Balikh valley can be accounted for in both political and economic aspects of Šamši-Adad's kingdom[23].

The occurrence of Khabur ware at Mari may be connected with the fact that pottery vessels, referred to as *karpātu* (jars), were used as containers for transporting liquids such as wine, oil and honey (*e.g.* ARMT VII: 257)[24]. The only Khabur ware jar found at Mari may have been a container of a commodity brought from the main distribution zone of Khabur ware in the time of Zimri-Lim. However, there arises a certain problem. Why was no Khabur ware introduced to Mari in the time of Šamši-Adad ?: his son Iasmaḫ-Adad was present at Mari as viceroy. This remains to be elucidated. The political connection of Mari with the main distribution zone of Khabur ware in the times of Šamši-Adad and Zimri-Lim, which naturally strengthened economic ties, may account for the occurrence of Khabur ware at Terqa, located on a route from the upper Khabur or the Tell 'Afar region to Mari. If Khabur ware occurs at Tell Fadghami and Tell Ta'ban in the lower Khabur valley, an explanation from the same aspect is possible.

Šamši-Adad's military activities are well known from the Mari and Shemshara texts, and from descriptions of two extant stelae. One of the targets of his conquest was the land of Arrapḫa including Nuzi. Arrapḫa is one of the lands for the control of which Šamši-Adad may have struggled with Daduša, king of Ešnunna, for a short while. However, in Šamši-Adad's campaign into the land of Qabra, between the Greater and Lesser Zab rivers, Ešnunna under the rule of Daduša cooperated with Šamši-Adad, as did Šamši-Adad with Ešnunna on occasions. In fact Ešnunna made a conspicuous figure at that time. The occurrence of Khabur ware at Nuzi may be connected with his campaign into Arrapḫa or his direct territorial control over the land[25]. The conquest of Arrapḫa and that of Qabra must also have ensured the supply of tin to Assyria through a route from Šušarra.

In this article, factors which may have caused the occurrences of Khabur ware outside its main distribution zone have been contemplated, as Hamlin did from aspects of the Old Assyrian tin trade as well as Šamši-Adad's political activities [Hamlin 1971; Kramer 1977]. However, it should not be overlooked that there was constant contact between southern Mesopotamia and northern Mesopotamia throughout the period of main phase of Khabur ware, as attested by the occurrences, in the north, of southern or southern-related types of pottery and as known from north Mesopotamian history itself[26].

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22) See Lewy 1958: pp.1–5. *Cf.* Astor 1978: n.26 on p.9.

23) However, Zimri-Lim's connection with the Balikh valley can also account for its occurrence (see note 21 above).

24) See Hamlin 1971: p.294 and Gerstenblith 1983: p.15 and p.63.

25) In addition, textile products from Gasur (later called Nuzi) is also mentioned in some of the Kültepe *Karum* II texts [Veenhof 1972: p.190]. It is further known that at Gasur/Nuzi, a handful of so-called "Cappadocian tablets" were found. These suggest that there was commercial contact between Gasur/Nuzi and Aššur, probably reflecting an aspect of the Old Assyrian trade. At Gasur/Nuzi, the association of Khabur ware with the "Cappadocian tablets" is not clear stratigraphically. However, the connection between Aššur and Gasur/Nuzi, before Šamši-Adad I, is a matter of consideration.

26) At several sites in the main Khabur ware distribution zone and in areas of secondary distribution of Khabur ware, we can find ceramic evidence suggesting the occurrences of such contact throughout the period of the main phase of Khabur ware. Isin-Larsa and Old

Khabur ware obviously continued in use abundantly after the death of Šamši-Adad I in the main distribution zone. When we postulate that the Old Assyrian tin trade continued after Šamši-Adad's death, the above interpretations for the occurrences of Khabur ware at the sites along trade routes to Kaniš may require re-evaluation from a chronological point of view[27]. After the period of the main phase of Khabur ware, the Khabur ware fashion also continued within the main distribution zone. Also at a site like Dinkha Tepe, Khabur ware continued to occur, while at a site like Alalaḫ, it reappeared. This raises interpretative problems which further need to be resolved.

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Babylonian types or their related types occur alongside of Khabur ware, or there are cases where southern shapes are reflected on some shapes of Khabur ware itself as a result of a mingling of the two different ceramic traditions. For example, in the early phase of level I at Chagar Bazar, there occur Isin-Larsa-related types, which are those found in the tablet room 106 of area T.D. [Mallowan 1947: Pl.LXXXII:13,16; *cf.* Ayoub 1982: type 27:3, 4]. Even at Dinkha Tepe, lying outside the main Khabur ware distribution zone, a typical Isin-Larsa type occurs, together with Khabur ware, only in the phase b context [Hamlin 1971: Pl.I:5a or *idem* 1974: Fig. I:5a; *cf.* Ayoub 1982: type 26]. Also at Chagar Bazar, an Old Babylonian-related type occurs, associated with Khabur ware in grave 142 assigned to the late phase of level 1 [Mallowan 1937: Fig.15:11; *cf.* Ayoub 1982: type 1B:1]. Curiously enough, at Kültepe-Kaniš, a band-painted, shouldered Khabur ware vessel which has an Old Babylonian-related shape occurs, associated with a grave of *Karum* Ib [T. Özgüç 1986: Pl.134:3 or Hrouda 1989: the right in Fig.2; *cf.* Ayoub 1982: type 1B:2]; this is an example of a hybrid between southern and northern ceramic traditions: and the fact that such an example was detected at an Anatolian site lying far from the main Khabur ware distribution zone is a matter of importance. Further, the argument, put forward by D.L. Stein, that the shapes of Hrouda's "*jüngere*" Khabur ware are southern Mesopotamian in origin [1984: p.9ff.] makes sense: the "band-painted, eversible-necked/rimmed shoulder cup" type, one of the types of Hrouda's "*jüngere*" Khabur ware, which, occurring in the main phase of Khabur ware, is defined here as Khabur ware, may reflect a southern ceramic influence on the north, and may thus be also a hybrid. In the same aspect, "straight/concave-sided beaker type painted vessels", relevant to Khabur Ware Periods 3–4, should be also considered [see and *cf.* D.L. Stein 1984: p.9ff.]. Furthermore, in this connection, it is interesting to note that the Old Babylonian dialect of Akkadian was rapidly adopted throughout north Mesopotamia after the Ur III period [Postgate 1992: n.63 on p.307 and n.550 on p.330], and that the use of the Old Assyrian dialect of Akkadian is attested almost exclusively at Kültepe-Kaniš and some other sites in Anatolia, remote from Aššur. It is also noted that Šamši-Adad I's career is concerned with Babylonia, as known from a biographical note in the Assyrian king-list [*e.g.* see D. Oates 1968b: p.38 or Larsen 1976: p.35]. It is well known from the Kültepe texts that during the period known as "Kültepe-Kaniš *Karum* II", corresponding here to Khabur Ware Period 1, Babylonian ("Akkadian") textiles were imported from the south to Aššur, from which they were re-exported into Kaniš, together with tin (*annakum*) brought from the east, probably from Afghanistan [for a source of tin, see Stech & Pigott 1986: p.44 and Fig. 1]. Some texts from Tell ed-Der (a suburb of ancient Sippar) also suggest the presence of a small trading outpost of Assyrian merchants at Sippar [Walker 1980: pp.15–17]. Such Assyrian trading activities continued in the period known as "Kültepe-Kaniš *Karum* Ib", which corresponds approximately to the first half of Khabur Ware Period 2, relevant to the present article. It goes without saying that in the latter part of Khabur Ware Period 2, there was many-sided contact between the north and the south.

27) In this respect, the dating, at Kültepe in *Karum* Ib, of the graves containing Khabur ware also becomes problematical.

List of sites yielding Khabur ware

—The main phase of Khabur ware—

The main distribution zone

No.	Khabur Ware Sites & References

【North Iraq】

1. Aššur (modern Qalat Shergat)
   Haller 1954: Taf. 1:an,as-av,az2; Hrouda 1957: pp.22–27, Taf. 9:1–6, 9–11, Taf.10:1; Dittmann 1990: p.154, Abb. 4; Hrouda 1991: p.106, Abb. 20; Dittmann 1992: p.309. See also Matthews & Wilkinson 1989: p.253 and 1991: p.173.

2. Tell Aqrah
   el-Amin & Mallowan 1950: p.62, Pl.IX:7.

3. Nineveh (ancient Ninuwa/Ninua, the main citadel mound = modern Tell Kuyunjik)
   Thompson & Hutchinson 1931: Pl.XXXIV:7, 8, 12; Mallowan 1937: p.103; Stronach 1992: p.306.

4. Tell Billa (ancient Šibaniba)
   Speiser 1933: Pl.LIX, Pl.LXXII.

5. Tepe Gawra
   Speiser 1935: Pl.LXXI:157, Pl.LXXVI:14.

6. Telul eth-Thalathat
   Chiyonobu 1974 (Tell V): p.47, Pl.LII:2, 3; Fukai & Matsutani 1977 (Tell I): pp.60– 61, Fig. 6:1.

7. Tell Taya (? ancient Samiatum/Zamiatum)
   Reade 1968: pp.257–259, Pl.LXXXVII:29; *idem* 1982a: p.74.

8. Tell al-Rimah (probably ancient Karana)
   D. Oates 1965: p.71; *idem* 1976: p.xiii. See also Reade 1968: p.258 and Oates & Oates 1994: p.171.

9. Tell Khoshi
   Lloyd 1938: p.141 (Groups X and XII, see p.134); Kepinski 1990: p.277.

   Lloyd's surface survey

   Tell Abu Maria (? ancient Apqum), Hajji Yunus, Tell Marmar/Haddha, Tell Hudhail, and Tell Heyal.
   Lloyd 1938: p.134ff. (Group XII).

   Ward's surface survey

   Hathal, Tell Kaif, *etc.*
   Hamlin 1971: n.32–33 on pp.195–196.

   <The Saddam (Eski Mosul) Dam Salvage Project area>

10. Wadi Khatkhun, Karhol Sufla, Khirbet Hatara, Tell Jumbur, Tell Baqaq 1, Tell Grai Qasim, Tell Jigan/Jikan (no.10), Nemrik 9, Tell Der Hall, Tell Fisna, Tell Rijim, Tell Jessary, Tell Museifneh, Tell Selal, Tell Thuwaij/Dhuwaij, Khirbet Karhasan, Tell Abu Dhahir, Khirbet Shireena/Wadi Suwaidiya 1, Tell Durdara, and Tell Gir Matbakh.
    Killick & Roaf 1983; Killick & Black 1985; Ball & Black 1987; Yusif 1987a for Jumbur and 1987b for Baqaq 1; Fujii *et al.* 1987 for Jigan, Der Hall and Fisna; Ii & Kawamata 1984–85 for Jigan; Fujii 1987a for Jigan and 1987b for Jessary; Fales *et al.* 1987 for Jigan; Bielinski 1987 for Rijim; Husain 1987 for Museifneh; Ball 1987 for Abu Dhahir, Khirbet Karhasan, Khirbet Shireena and Gir Matbakh; Spanos 1988 for Durdara; Fujii *et al.* 1989–90 for Thuwaij and Jessary; Numoto 1988 for Fisna and 1990 for Jessary; Tusa 1993 for Jigan; Gesuato 1993 for Jigan; Numoto 1996 for Thuwaij trench C.

    <The North Jazira Project area>

11. Tell Hamad Agha as-Saghir (no.11), Tell al-Hawa (no.12 — ? ancient Tille, Šuruzi, Ḫadnum, Kiškiš or Iapturm), Tell
12. Hamide, and Tell Hamide West.
    Spanos 1988, 1990a and 1990b for Hamad Agha as-Saghir; Ball *et al.* 1989 for Hawa; Ball & Wilkinson 1989–90 for Hawa; Ball 1990 for Hawa; Zimansky 1990 for Hamide; Matthews & Wilkinson 1989 for Hamide West; Wilkinson 1990: p.57 for Hamide.

Wilkinson's surface survey in the North Jazira Project area

Tell Kuran, Mowasha, al-Botha, Tell Wardan, Kharaba Tibn, Tell al-Samir, Tell Talab, Tell Man'a, Abu Kula, Tell Uwaynat, *etc.*

Wilkinson 1989: Table 1 on p.12; *idem* 1990: p.57.

【The upper Khabur basin of northeast Syria】

13. Tell Leilan (ancient Šubat-Enlil and ? Šeḫna)

Weiss 1983: p.50 and p.56; *idem* 1985a: p.7, and jar, pot and bowl examples in the illustration on p.13; *idem* 1985b: pp.276–281; Weiss *et al.* 1990: p.529ff., and Fig. 15:2, 5–7 and Fig. 27:1,2.

14. Tell Mohammed Diyab

Faivre 1992: p.56, pp.58–61 and p.68, and *e.g.* Fig. 7:4–5, Fig. 8:1–7, 10–15, Fig. 9: 1–10 and Fig. 11:1.

15. Tell Hamidi/al-Hamidiya

Mallowan 1947: p.45, concerning M. Dunand's 1926 soundings. See Eichler *et al.* 1985: *e.g.* Taf. 96:4004:1–4, Taf. 97:4006:3,4007:3,4, Taf. 99:4010:5, Taf. 101 and Taf. 102:4024. See also Eichler *et al.* 1990: *e.g.* Taf. 42:4006:4 and Taf. 43:4019:11, and *cf.* Wäfler 1990: pp.223–225 for a later phase.

16. Tell Barri (ancient Kaḫat)

Meijer 1986: p.31 (his site no.289, P.9a). Pecorella 1990: p.53 and p.55, and *cf.* p.58 and see some sherds in Pl.4:4 for a later phase.

17. Tell Brak (? ancient Nagar/Nawar or Tai'du)

Mallowan 1947: p.78; D. Oates 1982a: p.195; *idem* 1982b: p.70; *idem* 1985: p.164; D. Oates & J. Oates 1994: p.171 and p.173. See also Matthews *et al.* 1994: p.188, and Fig. 15, presumably for a later phase, and Matthews 1995: Fig. 21, presumably for a later phase.

18. Chagar Bazar (? ancient Ašnakkum)

Mallowan 1936, and *idem* 1937 and 1947 for earlier phases of level 1. See also Curtis 1982: pp.83–84.

19. Tell 'Arbit

Mallowan 1937: p.117, Fig. 21:13.

20. Tell Mozan (? ancient Urkiš)

Buccellati & Kelly-Buccellati 1988: Fig. 22 and Fig. 26:M1 79–82 and Ill.23; Kelly-Buccellati 1988: p.45; *idem* 1990: p.126; Buccellati & Kelly-Buccellati 1991: p.713.

21. Tell 'Ailun

Moortgat 1959: p.19, p.24, p.30, Abb. 9 said to have been brought from this site (see pp.17–19), and Abb.16–18. See also Warburton 1985: p.23.

22. Tell Fakhariyah

Kantor 1958: p.21ff. and *e.g.* Pl.37:108, 127, 133–134; Hrouda 1961: pp.222–223, Abb. 16:e,c.

Meijer's surface survey in the northeastern part of the upper Khabur basin

Tell Qaraṣa (98), Tell Abu Far'a (125), Tell Muhammad Kabir (231b), Tell Humaydi (251), *etc.*

Meijer 1986: *e.g.* Fig. 23:i-k and Fig. 24:c-e.

(Khabur ware occurs at 90 sites of the 290 sites that Meijer surveyed.)

Lyonnet's surface survey in the upper Khabur basin

Tell Hamdoun, Tell Ain Qard, Tell Farfara (210), Tell Qarassa (98), and Tell Roumeilan (154).

Lyonnet 1992: *e.g.* Fig. 5a:4–5, 7–11, Fig. 5b:12. 14, 15, 18–10, and Pl.IV:a-e.

(The figures in parentheses are Meijar's site numbers.)

【The uppermost Khabur basin of Turkey】

23. Girnavaz Höyük (? ancient Nabula)

A visit to this site in 1987, where, by courtesy of Dr. Armağan Erkanal, the present writer could have a look at surface and out-of-context Khabur ware sherds.

For Girnavaz, see H. Erkanal 1988.

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* The Khabur ware sites enumerated here are those at which there are levels assigned to the main phase of Khabur ware (Khabur Ware Period 2) or at which the existence of levels assigned to the phase can be inferred.

Secondary distribution areas

No.	Sites & References

【Iraq】

24. Tell Basmusian
    Abu al-Soof 1970: pp.68–69, Pl.XXXIII:2, 3, 9, 11, 13, 14.
    N.B. Illustrated in the report are one complete Khabur ware jar and five sherds of Khabur ware.

25. Nuzi (late third millennium Gasur, modern Yorgan Tepe)
    Starr 1937: Pl.70:B, for attribution to the same period as the main Khabur ware phase, and Pl.75:N, for attribution possibly to the same period as a later Khabur ware phase.
    N.B. Only one Khabur ware jar and one sherd of Khabur ware occur.

<The Qadisiyeh (Haditha) Dam Salvage Project area>

(26) ? 'Usiyeh
    Agha 1987–88: the photograph (Fig. 10) on p.118, a small band-painted jar from a grave, which was reported as Khabur ware (pp.118–119).
    N.B. But one suggests that the band-painted jar is likely to be Middle or Late Assyrian [J. Oates, personal communication in 1995].

【Syria】

27. Mari (modern Tell Hariri)
    Parrot 1959: Fig. 92:c/Pl.XXXVI:1584 = *idem* 1938: Fig. 1.
    N.B. Only one Khabur ware jar occurs, as noted in the text of this article.

28. Terqa (modern Tell 'Ashara)
    Buia 1993: *e.g.* Fig. 195:a, d, f-g on p.891, and see Tables 21–25.
    N.B. Fifteen or sixteen sherds of Khabur ware occur, as noted in the text of this article.

Kühne's survey in the lower Khabur valley

(29) ? Tell Fadghami

(30) ? Tell Ta'ban (? ancient Ṭabatum), now plotted as a site in the Khabur Dam Project area.
    Kühne 1974–77: p.254. See also Simpson 1983: p.342, citing Kühne 1974–77.
    Cf. Röllig & Kühne 1977–78: pp.126–127 and *idem* 1983: p.194.
    N.B. It is said that a few sherds of Khabur ware were found on the mound surfaces of Fadghami and Ta'ban. The occurrences of Khabur ware at these sites are possible in consideration of the presence of Khabur ware at Terqa. But convincing evidence for the presence of Khabur ware at the two sites has not yet been adduced.

<The Khabur Dam Project area>

(31) (Tell Bdeiri/Bdēri)
    Pfälzner 1995: p.38, Taf.52:a, Taf.66:e, and Taf. 66:i (?).
    N.B. Ten sherds of Khabur ware are said to have been recovered from some of the levels dated by Pfälzner to the 14th century B.C., which may however be out-of-context sherds [*cf.* Pfälzner 1995: p.38]. This seems to suggest a possibility that in unexcavated areas, there may be small area of occupation contemporary with a later Khabur ware phase, although there is no reason to deny another possibility that there may have been perhaps be occupation contemporary with the main phase of Khabur ware.

32. Tell Bi'a (ancient Tuttul)
    Strommenger 1991: p.15, Abb. 5; Einwag 1993: p.44, Abb. 9:1.2.
    N.B. A small number of Khabur ware sherds occur, as noted in the text of this article.

Balikh valley sites

33. Tell Hammam et-Turkman (? ancient Zalpa/Zalpaḫ)
    Curvers 1988: pp.403–404, Pl.142:214,215.
    N.B. The extremely limited occurrence of Khabur ware was confirmed in period VII (MB).

34. Tell Sahlan (? ancient Ṣaḫlala)
    Mallowan 1946: p.138. A visit to the site in 1988 by the present writer.
    N.B. It seems probable that as at Tell Hammam et-Turkman, there occurs little Khabur ware at this site.

35. Tell Mardikh (ancient Ebla)

Matthiae 1977: p.148; Mazzoni 1988: p.64; Mazzoni, personal communication in 1988. A visit to the site in 1988, where, by courtesy of Professor Paolo Matthiae and Dr. Stefania Mazzoni, the present writer had a look at the Ebla Khabur ware jar that is decorated with cross-hatched triangles and horizontal bands of paint, and has a typical Khabur ware shape.

N.B. A small quantity of Khabur ware occurs, certainly in Mardikh IIIB (MB II) [*cf.* Mazzoni 1988: p.64 with n.22, suggesting the presence of Khabur ware at the end of Mardikh IIIA (MB I), as in Mardikh IIIB].

【Turkey】

The Amuq plain

36. Alalaḫ (modern Tell Atchana)

Heinz 1992: Taf. 22:37 and Taf. 23:45, 46, 48 (four possible examples of Khabur ware, from level VIII).

N.B. Marlies Heinz attempts to distinguish Khabur ware from Syro-Cilician painted pottery, and suggests the occurrence of Khabur ware in levels X-VIII [1992: *e.g.* p.62]. The Alalaḫ X-VIII Khabur ware illustrated by Heinz is composed largely of samll body sherds with painted horizontal bands. The attribution of Heinz's "Khabur ware" sherds to the category of genuine Khabur ware is seriously questioned, with the exception of the four examples of level VIII, cited above.

The upper Balikh valley

37. ? Sultantepe

Prag 1970: n.8 on p.63 (according to John Evans). *Cf.* Lloyd & Gokçe 1953: p.27.

N.B. The occurrence of Khabur ware is possible.

38. ? Aşağı Yarimaca

Lloyd & Brice 1951: p.110 (surface sherds). *Cf. Anatolian Studies* II (1952): pp.11–13.

N.B. The occurrence of Khabur ware is possible, but evidence is unfortunately insufficient.

The İslahiye-Gaziantep-Nizip region

A site around Nizip

In the Gaziantep Museum, an example of certain Khabur ware, a jar decorated with horizontal bands, cross-hatched triangles and dots interposed between the triangles, was exhibited when the present writer visited the museum in 1987. The Khabur ware jar is said to have been brought from somewhere around Nizip.

N.B. This may support the occurrence of Khabur ware not only in the Nizip area but also in the İslahiye-Gaziantep region.

39. ? Tilmen Hüyük

Alkım 1969: pp.286–287.

N.B. It is merely said that levels IIIa and IIIb, regarded as falling between the 20th and the first quarter of the 18th century B.C., yielded both Syro-Cilician painted ware and Khabur ware.

40. ? Gedikli Hüyük (Karahüyük)

Alkım & Alkım 1966: p.35, Figs. 9–11 (band-painted sherds).

N.B. It is said that in level II, some ten sherds of Khabur ware were found. Four band-painted body sherds, from level II, are shown on the photographs of the report. But one of them is decorated in lustrous paint, and is therefore differentiated from Khabur ware [Alkım & Alkım 1966: Fig. 12]. The others, regarded by the excavators as Khabur ware, are decorated in matt reddish-brown paint. However, whether they are of Khabur ware is a matter for argument. Nevertheless, the occurrence of Khabur ware at a site around Nizip gives support to the possible presence of Khabur ware at Gedikli.

41. ? Sakce Gözü (Coba Hüyük)

Taylor *et al.* 1950: pp.109–110, and see pp.56–57. See also Seton-Williams 1954: p.133.

N.B. The Sakce Gözü evidence for Khabur ware is inconclusive, but the Nizip evidence noted above may suggest its possible occurrence.

<The Atatürk (Karababa) Dam Project and the Karakaya Dam Project area>

42. Lidar Höyük

Hauptmann 1988: p.110, Fig. 6; Hauptmann, personal communication in 1987. When visiting Lidar in 1987, the present writer could have a look at Khabur ware from the site by courtesy of Professor Dr. Harald Hauptmann.

N.B. The ceramic material of level 8 (MB II), including some examples of Khabur ware, is said to have parallels in Hammam et-Turkman VII, Hama H and Mardikh-Ebla IIIB.

43. İmikuşağı

Sevin & Köroğlu 1985: Res.12 on p.178; Sevin 1987: pp.309–311, Res.22 on p.330; Sevin 1988: pp.112–113, Fig. 13; Sevin, personal communication in 1987.

N.B. Levels 12–13 (MB II) produced some eighteen complete jars and pots with horizontal bands of matt paint and many sherds with matt-painted, banded decoration [Sevin, personal communication in 1987]. Characteristic of the painted pottery of levels 12–13 is the exclusive use of simple horizontal bands of matt red/reddish brown paint on the rim-to-shoulder. The band-painted pottery of levels 12–13 are reported as Khabur ware [Sevin 1987: pp.309–310; *idem* 1988: pp.112–113]. In fact, some of the band-painted complete jars and pots from levels 12–13 are similar in shape to some globular examples of Khabur ware from Chagar Bazar (compare Sevin 1987: Res.22:c,e with Mallowan 1936: Fig. 16:2,3). In my opinion, based on my having a look at the İmikuşağı band-painted pottery stored in the University of İstanbul through the courtesy of Professor Dr. Veli Sevin, it appears to be composed of the local imitations of Khabur ware and their variants. Accordingly, many band-painted sherds from levels 12–13 are probably of the "Khabur ware" and its variants. In sum, İmikuşağı is marked as a site yielding Khabur ware and its variants to some extent in quantity.

44. Kültepe (ancient Kaniš)

T. Özgüç 1953: p.115, Abb.17/25 and Abb.18/26; Emre 1963: p.95, Pl.XXV:1; T. Özgüç 1986: pp.92–93, Pl.134:3. See also Hrouda 1989: Fig. 2.

N.B. Three examples of Khabur ware, small in size and decorated only with painted horizontal bands, are known from graves of *Karum* Ib. The important fact is that none of the Khabur ware examples of this site occurs in contexts other than graves [Emre, personal communication in 1987].

【Northwest Iran】

The Ushnu-Solduz valley

45. Dinkha Tepe

Hamlin 1971: esp. see Pls. XII-XIII; *idem* 1974: esp. see Figs. XII-XIII. See also A. Stein 1940: Pl. XXI:1, Pl. XXII, Pl. XXIX:12, 13, and Pl. XXX:3.

N.B. Among the sites of secondary distribution of Khabur ware, Dinkha Tepe is one site yielding Khabur ware to some extent in quantity. With regard to the frequency of Khabur ware occurrence at Dinkha in period IV phases a-d, Carol Hamlin reports that "in a sample of the total sherdage at Dinkha, Ḫabur ware comprised 13%" [1974: n.6 on p.126]. This percentage may represent the frequency of Khabur ware occurrence at other sites in the Ushnu-Solduz valley.

46. Hasanlu

Dyson 1965: Fig. 1 (Pl.XXXI) and Fig. 13 (Pl.XLIV); *idem* 1973: p.703. See also A. Stein 1940: Pl.XXXI:12.

Dyson's soundings

47. Pisdeli Tepe

Hamlin 1971: p.196.

Aurel Stein's soundings/surveys & Wolfram Kleiss's survey

48. Tepe Gondavelah
49. Kulera Tepe
50. Mohammad Shah Tepe
51. Gird-i-Khusrau

Kroll 1994: p.164 and the map on p.165.

? Gird-i-Hasan 'Ali

A. Stein 1940: Pl.XXIII:26 and possibly 28.

N.B. Stephan Kroll states that a Khabur ware sherd illustrated in Aurel Stein's book as that from Gird-i-Hasan 'Ali (1940: Pl.XXII:26) is now stored in the British Museum as a find at Kulera Tepe [Kroll 1994: n.30 on p.164]. Kroll thus excludes Gird-i-Hasan 'Ali from the sites at which Khabur ware occurs.

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[4] The sites enumerated here, where Khabur ware was certainly found through excavations or where it occurs probably or possibly, are those at which there are levels contemporary with the main phase of Khabur ware (Khabur Ware Period 2) or at which the existence of levels contemporary with the phase can be inferred.

References to the illustrations of Fig. 1

Drawings reproduced

For nos. **1**, **2** & **6** (from Rimah), J. Oates 1970: Pl.IX:1–3. For nos. **3**, **21** & **29** (from Jigan Area C), Fujii 1987a: Fig. 5:6, 8, 9. For no. **7** (from Taya), Reade 1968: Pl.LXXXVII:26. For no. **8** (from Chagar Bazar), Mallowan 1936: Fig. 16:2. For nos. **9** & **19** (from Thuwaij), Fujii *et al.* 1989–90: Fig. 7:12, 14. For nos. **11**, **12**, **23**, **32**, **35** & **39** (from Chagar Bazar), Mallowan 1937: Fig. 21:1, 12, Fig. 22:5 & Fig. 24:6, 13, 14. For nos. **13**, **38** & **59** (from Fisna), Numoto 1988: Fig. 25:225, 234 & Fig. 31:319. For **14** & **15** (from Billa), Hrouda 1957: Taf.14:11 (= Speiser 1933: Pl.LXXII). For nos. **22**, **26** & **27** (from Leilan), Weiss 1985a: the illustration on p.13. For nos. **24** & **25** (from Kültepe), Hrouda 1957: Taf.13:3, 4 (= T. Özgüç 1953: Abb. 25 & 26). For no. **28** (from Dinkha), A. Stein 1940: Pl.XXIX:12. For no. **31** (from Chagar Bazar) and nos. **44**, **46**, **55** & **57** (from Brak), Mallowan 1947: Pl.LXVII:19, Pl.LXXVII:1, 2, 5 & Pl.LXXXII:15. For nos. **34** & **36** (from Brak), Matthews 1995: Fig. 21:5,8. For no. **37** (from Der Hall), Fujii *et al.* 1987: Fig. 17:6. For nos. **41**, **45**, **47** & **58** (from Billa), Speiser 1933: Pl.LX:3, Pl.LXI:3 & Pl.LXII:5,7. For nos. **48**, **49**, **53** & **54** (from Aššur), Hrouda 1957: Taf.7:6, Taf.8:8, 10, 15. For no. **56** (from Brak), Hrouda 1957: Taf.16:8 (= Mallowan 1947: Pl.XL:2).

Others

Nos. **4**, **5**, **10**, **16–18**, **20**, **40**, **42**, **43** & **51** (unpublished) are from Jigan Area C, and nos. **30**, **33**, **50** & **52** (unpublished), from Der Hall.

Bibliography

Several reports on excavations in the Saddam (Eski Mosul) Dam Salvage Project area in Iraq have appeared in *Researches on the Antiquities of Saddam Dam Basin Salvage and Other Researches* (1987), published by the State Organization of Antiquities and Heritage, Baghdad, in which included are Ball 1987: pp.78–81, Bielinski 1987: pp.13–19, Fales *et al.* 1987: pp.99–128, Fujii *et al.* 1987: pp.33–61, Fujii 1987a: pp.62–67 and 1987b: pp.68–72, Husain 1987: pp.156–161 (in Arabic), and Yusif 1987a: pp.10–25 (in Arabic) and 1987b: pp.26–39 (in Arabic). Pieces of information on excavations in the same project area are obtainable from a series of reports entitled "Excavations in Iraq" in the journal *Iraq*; Killick & Roaf 1983 (vol. 45), Killick & Black 1985 (vol. 47), Ball & Black 1987 (vol. 49), and Matthews & Wilkinson 1989 and 1991 (vols. 51 and 53) are referred to here.

Abu al-Soof, B.
1970 "Mounds in the Rania Plain and Excavations at Basmusian (1956)", *Sumer* 26, pp.65–104.

Agha, A.A.
1987–88 "al-Ussiyeh" (in Arabic), *Sumer* 45, pp.110–141.

Akkermans, P.
1990 'Operation 3 on the Lower Town', in Weiss *et al.* 1990, pp.542–547.

Akkermans, P. and Weiss, H.
1987–88 "Tell Leilan 1987 Operation 3: A Preliminary Report on the Lower Town Palace", *Les Annales Archeologiques Arabes Syriennes* 37–38, pp.91–109.

Alkım, U.B.
1969 "The Amanus Region in Turkey: New Light on the Historical Geography and Archaeology", *Archaeology* 22, pp.280–289.

Alkım, U.B. and Alkım, H.
1966 "Excavations at Gedikli (Karahüyük). First Preliminary Report", *Belleten* 30, pp.27–57.

el-Amin, M. and Mallowan, M.E.L.
1950 "Soundings in the Makhmur Plain", *Sumer* 6, pp.55–90.

Archives Royales de Mari-Transcription Traduction (ARMT), Paris
I. Correspondance de Šamši-Addu et de ses fils (par G. Dossin), 1950.
VII. Texts économiques et administratifs (par J.B. Bottéro), 1957.

Astour, M.C.
1978 "The Rabbeans: A Tribal Society on the Euphrates from Yaḫdun-Lim to Julius Caesar", *Syro-Mesopotamian Studies* 2, pp.1–12.

Ayoub, S.
1982 *Die Keramik in Mesoptamien und in den Nachbargebieten. Von der Ur III-Zeit bis zum Ende der kassitischen Periode* (Münchener Vorderasiatische Studien, Band II), Mäander Kunstverlag, Munich.

Balkan, K.
1955 *Obsevations on the Chronological Problems of the Kārum Kaniš* (Türk Tarih Kurumu Yayınlarından VII), Türk Tarih Kurumu Basımevi, Ankara.

Ball, W.
1990 "The Tell al-Hawa Project: The Second and Third Seasons of Excavations at Tell al-Hawa, 1987–88", *Mediterranean Archaeology* 3, pp.75–92.

Ball, W., Tucker, D. and Wilkinson, T.J.
1989 "The Tell al-Hawa Project: Archaeological Investigations in the North Jazira 1986–87", *Iraq* 51, pp.1–66.

Ball, W. and Wilkinson, T.J.
1989–90 "British Work in the North Jazira Project 1986–87. Preliminary Report", *Sumer* 46, pp.7–12.

Beitzel, B.J.
1984 "Išme-Dagan's Military Actions in the Jezirah: A Geographical Study", *Iraq* 46, pp.29–42.
1992 "The Old Assyrian Caravan Road in the Mari Royal Archives", in G.D. Young (ed.), *Mari in Retrospect: Fifty Years of Mari and Mari Studies* (Eisenbrauns, Winona Lake, Indiana), pp.35–57.

Bounni, A.
1990 "The Khabur and Haseke Dam Projects and the Protection of Threatened Antiquities in the Region (A Preliminary Report)", in Eichler *et al.* 1990, pp.19–29.

Buccellati, G. and Kelly-Buccellati, M.
1988 *Mozan 1. The Soundings of the First Two Seasons* (Bibliotheca Mesopotamica, Vol.20), Undena Publications, Malibu.
1991 'Mozan', in H. Weiss, "Archaeology in Syria", *American Journal Archaeology* 95, pp.712–714.

Buchanan, B.
1969 "The End of the Assyrian Colonies in Anatolia: The Evidence of the Seals", *Journal of the American Oriental Society* 89, pp.758–762.

Buia, D.
1993 *Historical Implications Derived from a Descriptive Study of the Excavated Structures and Ceramics of a Second Millennium B.C. Near Eastern Site, Ancient Terqa* (Ph.D. Dissertation, University of California), University Microfilms International, Ann Arbor, Michigan.

Charpin, D.
1987 "Šubat-Enlil et le pays d'Apum", *Mari, Annales de Recherches Interdisciplinaires* 5, pp.129–140.

Chiyonobu, Y.
1974 '9) Pottery Vessels of Other Types Mentioned Above' (in Chapter IV,1.), in S. Fukai, K. Horiuchi & T. Matsutani, *Telul eth Thalathat, Vol.III. The Excavation of Tell V. The Fourth Season (1965)*, (The Yamakawa Publishing Co.,Ltd., Tokyo), p.47.

Curtis, J.
1982 "Chagar Bazar", in Curtis (ed.) 1982, pp.79–85.

Curtis, J. (ed.)
1982 *Fifty Years of Mesopotamian Discovery. The Work of the British School of Archaeology in Iraq, 1932–1982*, The British School of Archaeology in Iraq, London.

Curvers, H.H.
1988 "Chapter 10: The Period VII Pottery", in M.N. van Loon (ed.), *Hammam et-Turkman I. Report on the University of Amsterdam's 1981–84 Excavations in Syria*, Vol.II (Publications of the Netherlands Historical and Archaeological Institute in Istanbul LXIII, Leiden), pp.397–455.

Dalley, S.
1976a "Chapter I: Chronology and History of the Tablets from Rooms II of the Palace", in Dalley *et al.* 1976, pp.1–30.

1976b "Chapter II: The Iltani Archive", in Dalley *et al.* 1976, pp.31–161.
1976c "Chapter III: The Tablets from Rooms II and XVII of the Temple", in Dalley *et al.* 1976, pp.163–193.
1984 *Mari and Karana. Two Old Babylonian Cities*, Longman, London.

Dalley, S., Walker, C.B.F. and Hawkins, J.D.
1976 *The Old Babylonian Tablets from Tell al Rimah* (with an Introduction by D. Oates), The British School of Archaeology in Iraq, London.

Dittmann, R.
1990 "Ausgrabungen der Freien Universität Berlin in Assur und Kār-Tukultī-Ninurta in den Jahren 1986–89", *Mitteilungen der Deutschen Orient-Gesellschaft* 122, pp.157–171.
1992 'Aššur and Kār-Tukltī-Ninurta', in K. Nashef, "Archaeology in Iraq", *American Journal of Archaeology* 96, pp.307–312.

Dyson, R.H., Jr.
1965 "Problems of Protohistoric Iran as Seen from Hasanlu", *Journal of Near Eastern Studies* 24, pp.193–217.
1973 "Chapter XVI. The Archaeological Evidence of the Second Millennium B.C. on the Persian Plateau", in *The Cambridge Ancient History* (3rd edition), Vol.II Part 1 (Cambridge University Press), pp.686–715.

Eichler, S., Haas, V., Steudler, D., Wäfler, M. and Warburton, D.
1985 *Tall al-Ḥamīdīya 1. Vorbericht 1984* (Orbis Biblicus et Orientalis, Series Archaeologica 4), Universitätsverlag Freiburg Schweiz.

Eichler, S., Wäfler, M. and Warburton, D.
1990 *Tall al-Ḥamīdīya 2. Vorbericht 1985–1987* (with Symposion: Recent Excavations in the Upper Khabur Region, Berne, December 9–11, 1986), (Oribis Biblicus et Orientalis, Series Archaeologica 6), Universitätsverlag Freiburg Schweiz.

Eidem, J.
1985 "News from the Eastern Front: The Evidence from Tell Shemshara", *Iraq* 47, pp.83–107.
1987–88 "Tell Leilan Tablets 1987 — A Preliminary Report", *Les Annales Archeologiques Arabes Syriennes* 37–38, pp.110–127.
1991 "The Tell Leilan Archives 1987", *Revue d'assyriologie et d'archéologie orientale* 85, pp.109–135.

Einwag, B.
1993 "Die Keramik aus dem Gruftbereich des jungen Palastes in Tall Bi 'a", *Mitteilungen der Deutschen Orient-Gesellschaft* 125, pp.33–50.

Emre, K.
1963 "The Pottery of the Assyrian Colony Period According to the Building Levels of the Kaniş Karum", *Anatolia* VII, pp.87–99.

Erkanel, H.
1988 "Girnavaz", *Mitteilungen der Deutschen Orient-Gesellschaft* 120, pp.139–151.

Faivre, X.
1992 'La céramique de Mohammed Diyab, 1990–1991', in J.-M. Durand *et al.*, "Tell Mohammed Diyab, Campagnes 1990 et 1991", *Mémoires de N.A.B.U.* 2, pp.55–89.

Fukai, S. and Matsutani, T.
1977 "Excavations at Telul eth-Thalathat 1976", *Sumer* 33, pp.48–64.

Fujii, H., Yoshikawa, M., Oguchi, H., Oguchi, K. and Numoto, H.
1989–90 "Preliminary Report on the Excavations at Tell Thuwaij, Tell Jessary (the Second Season), and Qasr Banat", *Sumer* 46, pp.38–59.

Gadd, C.J.
1940 "Tablets from Chagar Bazar and Tall Brak, 1937–38", *Iraq* 7, pp.22–66.

Gerstenblith, P.
1983 *The Levant at the Beginning of the Middle Bronze Age* (Americam Schools of Oriental Research Dissertation Series, No.5), American Schools of Oriental Research.

Gesuato, M.K.
1993 "Pre-Islamic Pottery from Tell Jikan", in G. Wilhelm & C. Zaccagnini, *Tell Karrana 3. Tell Jikan. Tell Khirbet Salih* (Baghdader Forschungen, Band 15, Mainz), pp.269–280.

Goetze, A.
1953 "An Old Babylonian Itinerary", *Journal of Cuneiform Studies* 7, pp.51–72.
1975 "Chapter XVII. The Struggle for the Domination of Syria (1400–1300 B.C.)", in *The Cambridge Ancient History* (3rd edition), Vol.II Part 2A (Cambridge University Press), pp.1–20.

Grayson, A.K.
1987 *Assyrian Rulers of the Third and Second Millennia BC (to 1115 BC)* (The Royal Inscriptions of Mesopotamia, Assyrian Periods Vol.1), University of Tronto Press.

Haller, A.
1954 *Die Gräber und Grüfte von Assur* (Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft 65), Verlag Gebr. Mann, Berlin.

Hamlin, C.
1971 *The Ḫabur Ware Ceramic Assemblage of Northern Mesopotamia: An Analysis of Its Distribution* (Ph.D. Dissertation, University of Pennsylvania), University Microfilms International, Ann Arbor, Michigan.
1974 "The Early Second Millennium Ceramic Assemblage of Dinkha Tepe", *Iran* 12, pp.125–146.

Hauptmann, H.
1988 'Lidar', in M.J. Mellink, "Archaeology in Anatolia", *American Journal of Archaeology* 92, pp.110–111.

Hawkins, J.D.
1976 "Chapter V: The Tablets from the Temple Stairway", in Dalley *et al.* 1976, pp.195–246.

Heinz, M.
1992 *Tell Atchana/Alalakh. Die Schichten VII-XVII* (Alter Orient und Altes Testament, Band 41), Verlag Butzon & Bercker Kevelaer/Neukirchener Verlag, Neukirchen-Vluyn.

Hrouda, B.
1957 *Die bemalte Keramik des zweiten Jahrtausends in Nordmesopotamien und Nordsyrien* (Istanbuler Forschngen, Band 19), Verlag Gebr.Mann, Berlin.
1961 "Tell Fechērīje. Die Keramik", *Zeitschrift für Assyriologie* 20, pp.201–239.
1971 *Vorderasien I. Mesopotamien, Babylonien, Iran und Anatolien*, C.H. Beck'sche Verlagsbuchhandlung, Munich.
1989 "Die Ḫābūr-Ware in neuerer Sicht", in K. Emre *et al.* (eds.), *Anatolia and the Ancient Near East. Studies in Honor of Tahsin Özgüç* (Ankara), pp.205–214.
1991 "Vorläufiger Bericht über die neuen Ausgrabungen in Assur. Frühjahr 1990", *Mitteilungen der Orient-Gesellschaft* 123, pp.95–109.

Ii, H. and Kawamata, M.
1984–85 "The Excavations at Tell Jigan by the Japanese Archaeological Expedition: A Preliminary Report on the First Season of Work" (in Japanese), *al-Rāfidān* 5–6, pp.151–214.

Kantor, H.J.
1958 "III. The Pottery", in C.W. McEwan *et al.*, *Soundings at Tell Fakhariyah* (OIP LXXIX, Chicago), pp.21–41.

Kelly-Buccellati, M.
1988 "6. Artifacts from the Excavations", in Buccellati & Kelly-Buccellati 1988, pp.65–81.
1990 "Three Seasons of Excavation at Tell Mozan", in Eichler *et al.* 1990, pp.119– 132.

Kelly-Buccellati, M. and Shelby, W.R.
1977 "Terqa Preliminary Report No.4: A Typology of Ceramic Vessels of the Third and Second Millennia from the First Two Seasons", *Syro-Mesopotamian Studies* 1, pp.171–226.

Kepinski, C.
1990 'Ḫōšī', in K. Nashef, "Archaeology in Iraq", *American Journal of Archaeology* 94, pp.275–277.

Kohlmeyor, K.
1985 "Mari (Tell Hariri)", in H. Weiss (ed.), *Ebla to Damascus. Art and Archaeology of Ancient Syria* (Smithsonian Institution, Washington), pp.194–197.

Kramer, C. (= Hamlin, C.)
1977 "Pots and Peoples", in L.D. Levine & T.C. Young, Jr. (eds), *Mountains and Lowlands: Essays in the Archaeology of Greater Mesopotamia* (Bibliotheca Mesopotamica, Vol.7, Malibu), pp.91–112.

Kroll, S.
1994 "Habur-Ware im Osten oder: Der TAVO auf Irrewegen im Iranischen Hochland", in P. Calmeyer *et al.* (eds.), *Beiträge zur Altorientalischen Archölogie und Altertumskunde. Festschrift für Barthel Hrouda zum 65.Geburtstag* (Harrassowitz Verlag, Wiesbaden), pp.156–166.

Kühne, H.
1974–77 "Zur historischen Geographie am Unteren Hābūr", *Archiv für Orientforschung* 25, pp.249–255.

Laessøe, J.
1959 "Akkadian Annakum: 'Tin' or 'Lead' ?", *Acta Orientalia* 24, pp.83–94.

Larsen, M.T.
1976 *The Old Assyrian City-State and its Colonies* (Mesopotamia, Vol.4), Akademisk Forlag, Copenhagen.

Lewy, H.
1958 "Šubat-Šamaš and Tuttul", *Orientalia* 27 (Nova series), pp.1–18.

Lloyd, S.
1938 "Some Ancient Sites in the Sinjar District", *Iraq* 5, pp.123–142.

Lloyd, S. and Brice, W.
1951 "Harran", *Anatolian Studies* 1, pp.77–111.

Lloyd, S. and Gökçe, N.
1953 "Sultantepe. Anglo-Turkish Joint Excavations, 1952", *Anatolian Studies* 3, pp.27–51.

Luckenbill, D.D.
1989 *Ancient Records of Assyria and Babylonia*, Vol. I, Histories & Mysteries of Man Ltd., London.

Lyonnet, B.
1991 'Upper Ḫabur', in H. Weiss, "Archaeology in Syria", *American Journal of Archaeology* 95, pp.697–698.
1992 "Reconnaissance dans le haut Habur: étude de la céramique", *Mémoires de N.A.B.U.* 2, pp.103–132.

Mallowan, M.E.L.
1936 "The Excavations at Tall Chagar Bazar, and an Archaeological Survey of the Ḫabur Region, 1934–5", *Iraq* 3, pp.1–86.
1937 "The Excavations at Tall Chagar Bazar and an Archaeological Sruvey of the Ḫabur Region. Second Campaign, 1936", *Iraq* 4, pp.91–177.
1946 "Excavations in the Baliḫ Valley, 1938", *Iraq* 8, pp.111–159.
1947 "Excavations at Brak and Chagar Bazar", *Iraq* 9, pp.1–259.

Matthews, R.J.
1995 "Excavations at Tell Brak, 1955", *Iraq* 57, pp.87–111.

Matthews, R.J., Matthews, W. and McDonald, H.
1994 "Excavations at Tell Brak, 1994", *Iraq* 56, pp.177–194.

Matthiae, P.
1977 *Ebla. An Empire Rediscovered*, translated from *Ebla: un impero ritrovato* by C. Holme, Hodder and Stoughton, London.

Mazzoni, S.
1988 " 'Problèmes et questions ouvertes' nell'archeolocia orientale", *Vicino Oriente* 7, p.59ff.

Meijer, D.J.W.
1986 *A Survey in Northeastern Syria* (Publications of the Netherlands Historical and Archaeological Institute in Istanbul LVIII), Leiden.

Moortgat, A.
1959 *Archälogisch Forschungen der Max Freiherr von Oppenheim-Stiftung im nördlichen Mesopotamien 1956*

(Wissenschaftliche Abhandlungen der Arbeitsgemeinschaft für Forschung des Landes Nordrhein-Westfalen, Band 7), Westdeutscher Verlag, Köln & Opladen.

Numoto, H.
1988 "Excavations at Tell Fisna" (in Japanese), *al-Rāfidān* 9, pp.1–71.
1990 "Findings from Tell Jessary", *al-Rāfidān* 11, pp.201–244.
1996 "Excavations at Tell Thuwaij Trench C", *al-Rāfidān* 17, pp.77–110.

Oates, D.
1965 "The Excavations at Tell al Rimah, 1964", *Iraq* 27, pp.62–80.
1967 "The Excavations at Tell al Rimah, 1966", *Iraq* 29, pp.70–96.
1968a "The Excavations at Tell al Rimah, 1967", *Iraq* 30, pp.115–138.
1968b *Studies in the Ancient History of Northern Iraq*, The Oxford University Press, London.
1970 "The Excavations at Tell al Rimah, 1968", *Iraq* 32, pp.1–26.
1972 "The Excavations at Tell al Rimah, 1971", *Iraq* 34, pp.77–86.
1976 "Introduction", in Dalley *et al.* 1976, pp.ix-xvi.
1982a "Excavations at Tell Brak, 1978–81", *Iraq* 44, pp.187–204.
1982b "Tell Brak", in Curtis (ed.) 1982, pp.62–71.
1982c "Tell al Rimah", in Curtis (ed.) 1982, pp.86–98.
1985 "Excavations at Tell Brak, 1983–84", *Iraq* 47, pp.159–173.

Oates, D. and Oates, J.
1976 "Early Irrigation Agriculture in Mesopotamia", in G. de G. Sieveking *et al.* (eds.), *Problems in Economic and Social Archaeology* (Gerald Duckworth & Co.Ltd. The Old Piano Factory, London), pp.109–135.
1991 "A Note on the Date of the Fragmentary Tablet TB 11021", *Iraq* 53, p.158.
1994 "Tell Brak: A Stratigraphic Summery", *Iraq* 56, pp.167–176.

Oates, J.
1970 "The date of the Phase 2 building—the evidence of the pottery', in D. Oates 1970, pp.16–20.
1990 "Tell Brak in the Fourth and Third Millennia: From Uruk to Ur III", in Eichler *et al.* 1990, pp.133–147.

Orlin, L.L.
1970 *Assyrian Colonies in Cappadocia*, Mouton, the Hague.

Özgüç, N.
1968 "New Light on the Dating of the Levels of the Karum of Kanish and of Acemhöyük near Aksaray", *American Journal of Archaeology* 72, pp.318–320.

Özgüç, T.
1953 "Vorläufiger Bericht über die Grabungen von 1950 in Kültepe Ausgeführt im Auftrage des Türk Tarih Kurumu", *Belletin* 17, pp.109–118.
1986 *Kültepe-Kaniş II. New Researches at the Trading Center of the Ancient Near East*, Türk Tarih Kurumu Basımevi, Ankara.

Parayre, D.
1990 'Seals and Seal Impressions from Tell Leilan 1985', in Weiss *et al.* 1990, pp.556–568.

Pardee, D.
1984 "Literary Sources for the History of Palestine and Syria. The Mari Archives", *Biblical Archaeologist* 47, pp.88–99.

Parrot, A.
1938 "Mari et Chagar Bazar", *Syria* 19, pp.308–310.
1959 *Le Palais* (Mission Archéologique de Mari, Vol.II. Institut Français d'Archéologie de Beyrouth. Bibliothèque archélogique et historique. Tome LXX), Librairie Orientaliste Paul Geuthner, Paris.

Pecorella, P.E.
1990 "The Italian Excavations at Tell Barri (Kaḫat), 1980–1985", in Eichler *et al.* 1990, pp.47–66.

Pfälzner, P.
1995 *Mittanische und Mittelassyrische Keramik: eine chronologische, funktionale und produktionsökonomische Analyse* (Berichte der Ausgraburg Tall Šeḫ Ḥamad/Dūr-Katlimmu, Band 3), Dietrich Reimer Verlag, Berlin.

Postgate, J.N.
1973 'Appendix 1: Tell Taya Tablets, 1972–73', in J.E. Reade, "Tell Taya (1972–73): Summary Report", *Iraq* 35, pp.173–175.
1992 *Early Mesopotamia. Society and Economy at the Dawn of History*, Routledge, London & New York.

Prag, K.
1970 "The 1959 Deep Soundings at Harran in Turkey", *Levant* 2, pp.63–94.

Reade, J.E.
1968 "Tell Taya (1967): Summary Report", *Iraq* 30, pp.234–264.
1982a "Tell Taya", in Curtis (ed.) 1982, pp.72–78.
1982b "Nimrud", in Curtis (ed.) 1982, pp.99–112.

Röllig, W. and Kühne, H.
1977–78 "The Lower Habur. A Preliminary Report on a Survey Conducted by the Tubinger Atlas des Vorderen Orients in 1975", *Les Annales Archeologiques Arabes Syriennes* 27–28, pp.115–140.
1983 "The Lower Habur. Second Preliminary Report on a Survey in 1977", *Les Annales Archeologiques Arabes Syriennes* 33, pp.187–199.

Seeden, H. and Wilson, J.
1988 "Processes of Site Formation in Villages of the Syrian Ǧazīra", *Berytus* 36, pp.169–188.

Seton-Williams, M.V.
1954 "Cilician Survey", *Anatolian Studies* 4, pp.121–174.

Sevin, V.
1987 "İmikuşağı Kazıları, 1986", *Kazı Sonuçları Toplantısı* 9 (Ankara), pp.299–333.
1988 "İmikuşağı', in M.J. Mellink, "Archaeology in Anatolia", *American Journal of Archaeology* 92, pp.112–113.

Sevin, V. and Köroğlu, K.
1985 "İmikuşağı Kazıları, 1984", *Kazı Sonuçları Toplantısı* 7 (Ankara), pp.163–179.

Simpson, K.C.
1983 *Settlement Patterns on the Margins of Mesopotamia: Stability and Change along the Middle Euphrates, Syria* (Ph.D. Dissertation, University of Arizona), University Microfilms International, Ann Arbor, Michigan.

Spanos, P.Z.
1988 "Ausgrabungen in Tall Durdara (Eski-Mosul-Projekt) und Tall Ḥamad Āġa aṣ-Ṣaġīr (Ǧazīra-Projekt), Nordirak, 1986", *Mitteilungen der Deutschen Orient-Gesellschaft* 120, pp.59–92.
1990a "Ausgrabungen in Tall Ḥamad Āġa aṣ-Ṣaġīr 1988", *Mitteilungen der Deutschen Orient-Gesellschaft* 122, pp.89–123.
1990b 'Ḥamad Āġa aṣ-Ṣaġīr", in K. Nashef, "Archaeology in Iraq", *American Journal of Archaeology* 94, pp.268–270.
1992 "Gibt es bei der 'Habur'-Ware einen Schulterbecher ?", in B. Hrouda *et al.* (eds.), *Von Uruk nach Tuttul: eine Festschrift für Eva Strommenger; Studien und Aufsätze von Kollegen und Freunden* (Münchener Vorderasiatische Studien, Band XII), Profil Verlag, Munich, pp.193–196.

Speiser, E.A.
1933 "The Pottery of Tell Billa", *The Museum Journal* 23, pp.249–308.
1935 *Excavations at Tepe Gawra*, Vol.I. *Levels I-VIII*, University of Pennsylvania Press, Philadelphia.

Starr, R.F.S.
1937 *Nuzi. Report on the Excavations at Yorgan Tepe near Kirkuk, Iraq ...*, Vol.II (Plates and Plans), Harvard University Press, Cambridge, Massachusetts.

Stech, T. and Pigott, V.C.
1986 "The Metals Trade in Southwest Asia in the Third Millennium B.C.", *Iraq* 48, pp.39–64.

Stein, Aurel
1940 *Old Routes of Western Iran. Narrative of an Archaeological Journey Carried Out and Recorded*, Macmillan and Company Ltd., London.

Stein, Diana L.
1984 "Khabur Ware and Nuzi Ware: Their Origin, Relationship, and Significance", *Assur* 4, pp.1–65.

1989 "A Reappraisal of the 'Sauštatar Letter' from Nuzi", *Zeitschrift für Assyriologie* 79, pp.36–60.

Strommenger, E.
1991 "Ausgrabungen in Tall Bi'a 1990", *Mitteilungen der Deutschen Orient-Gesellschaft* 123, pp.7–34.

Stronach, D.
1992 'Nineveh', in K. Nashef, "Archaeology in Iraq", *American Journal of Archaeolgy* 96, pp.305–306.

Taylor, J. du P., Seton Williams, M.V. and Waechter, J.
1950 "The Excavations at Sakce Gözü", *Iraq* 12, pp.53–138.

Thompson, R. Campbell and Hamilton, R.W.
1932 "The British Museum Excavations on the Temple of Ishtar at Nineveh, 1930–31", *Liverpool Annals of Archaeology and Anthropology* 19, pp.55–116.

Thompson, R. Campbell and Hutchinson, R.W.
1931 "The Site of the Palace of Ashurnasirpal at Nineveh, Excavated in 1929–30 on Behalf of the British Museum", *Liverpool Annals of Archaeology and Anthropology* 18, pp.79–112.

Tusa, S.
1993 "Excavations at Tell Jikan", in G. Wilhelm & C. Zaccagnini, *Tell Karana 3. Tell Jikan. Tell Khirbet Salih* (Baghdader Forschungen, Band 15, Mainz), pp.257–260.

Veenhof, K.R.
1972 *Aspects of Old Assyrian Trade and its Terminology* (Studia et Documenta, Vol.X), E.J. Brill, Leiden.
1985 "Eponyms of the 'Later Old Assyrian Period' and Mari Chronology", *Mari, Annales de Recherches Interdisciplinaires* 4, pp.191–218.

Wäfler, M.
1990 "The Excavations at Tell Hamidi", in Eichler *et al.* 1990, pp.219–228.

Walker, C.
1980 "Some Assyrians at Sippar in the Old Babylonian Period", *Anatolian Studies* 30, pp.15–22.

Warburton, D.
1985 "3.1. Previous Archaeological Work in the Ḫābūr Region", in Eichler *et al.* 1985, pp.13–30.

Weiss, H.
1983 "Tell Leilan in the Third and Second Millennia B.C.", *Les Annales Archeologiques Arabes Syriennes* 33, pp.47–73.
1985a "Tell Leilan on the Habur Plains of Syria", *Biblical Archaeologist* 48, pp.6–34.
1985b "Tell Leilan and Shubat Enlil", *Mari, Annales de Recherches Interdisciplinaires* 4, pp.269–292.
1986 "The Origins of Tell Leilan and the Conquest of Space in Third Millennium Mesopotamia", in H. Weiss (ed.), *The Origins of Cities in Dry-farming Syria and Mesopotamia in the Third Millennium B.C.* (Four Quarters Publshing Co., Guilford, Connecticut), pp.71–108.
1990 'Introduction', in Weiss *et al.* 1990., pp.529–542.
1994 'Leilan', in H. Weiss, "Archaeology in Syria", *American Journal of Archaeology* 98, pp.125–127.

Weiss, H., Akkermans, P., Stein, G.L., Parayre, D. and Whiting, R.
1990 "1985 Excavations at Tell Leilan, Syria", *American Journal of Archaeology* 94, pp.529–581.

Weiss, H., Courty, M.-A., Wetterstrom, W., Guichard, F., Senior, L., Meadow, R. and Curnow, A.
1993 "The Genesis and Collapse of Third Millennium North Mesopotamian Civilization", *Science* 261, pp.995–1004.

Whiting, R.M.
1990a 'The Tell Leilan Tablets: A Preliminary Report', in Weiss *et al.* 1990, pp.568– 579.
1990b "Tell Leilan/Šubat-Enlil: Chronological Problems and Perspectives", in Eichler *et al.* 1990, pp.167–218.

Wilkinson, T.J.
1989 'Part 1: The Regional Study', in Ball *et al.* 1989, pp.6–19.
1990 "The Development of Settlement in the North Jazira between the 7th and 1st Millennia BC", *Iraq* 52, pp.49–62.

Zimansky, P.
1990 'Ḥamīda' in K. Nashef, "Archaeology in Iraq", *American Journal of Archaeology* 94, pp. 270–272.

PHRYGISCHE DOPPELNADELN DES 8. JHS. V. CHR.

Rainer Michael BOEHMER*

In den Jahren 1978–1980 haben die Expeditionen der Kokushikan Universität (Tokio) und der Abt. Baghdad des Deutschen Archäologischen Instituts nahe beieinander im Hamrin-Stauseegebiet gearbeitet. Das gute Verhältnis zwischen den Expeditionen ist unvergessen. So sollen mit diesem bescheidenen Beitrag außer dem Leiter der japanischen Expedition, Professor Hideo Fuji, ebenfalls seine Mitarbeiter sowie der auch unserer eigenen Expedtion so sehr hilfreiche, leider vor einiger Zeit verstorbene irakische Representative Salaheddin Hamid geehrt werden, die über drei Jahre hinweg ohne Heimaturlaub, also sommers wie winters, ihre Untersuchungen am Tell Gubba und am Tell Sunghur ununterbrochen durchgeführt haben, eine Leistung, die im Gegensatz zu einigen Unternehmungen vor dem ersten Weltkrieg heutzutage nicht mehr erbracht wird.

Obwohl das Hauptinteresse der japanischen Kollegen der Kokushikan Universität der Archäologie des Irak gilt, haben sie doch allezeit auch Interesse an der Altertumskunde der Nachbargebiete gezeigt. So sei es gestattet, hier eine Frage aus dem Bereich der Eisenzeit Anatoliens kurz zu erörtern.

H. Parzinger geht in einem jüngst erschienenen Aufsatz "Phrygische Doppelnadeln aus Boğazköy -Zur östlichen Herkunft einer balkanischen Nadelform"[1] auf die Datierung dieser für Anatolien immer noch besonderen Nadeln aus Boğazköy ein. Grundlage bilden zwei Endpublikationen der Boğazköy-Grabung[2]. Die dort angegebenen Fundortangaben entstammen den Grabungsinventaren und wurden auf die Verbindlichkeit der Schichtzuweisung mit dem Bearbeiter der Architektur Büyükkales, des Großen Tempels und des Südareals, Peter Neve, durchgesprochen[3]. Parzinger führt allerdings dazu aus: "Auf Büyükkale stammen die meisten [Doppelnadeln, RMB] angeblich aus Schicht Ib - nach Boehmer um 650 v. Chr.-sowie-wohl umgelagert-aus jüngeren, nachphrygischen Straten"[4]. Dies trifft den Sachverhalt nicht exakt. Der Schicht Büyükkale (BK) Ib, d. h. der älteren Phase von BK I, konnten nur zwei Nadeln mit Sicherheit zugewiesen werden (Abb. 2 a. b)[5]. Die Fundstellen aller restlichen Nadeln ließen sich nicht genauer als zur phrygischen Schicht BK I gehörig einordnen[6] (ca. 650 - 500 v. Chr.)[7]. In hellenistischem Zusammenhang verlagert wurde eine Nadel angetroffen[8].

Nun erwägt Parzinger, daß eine Datierung des Nadeltyps vom 8. Jh. v. Chr. an nicht auszuschließen sei. Dieser Überlegung kann heute zugestimmt werden, und zwar aus folgendem Grund: Als ich vor 30 Jahren die Kleinfunde aus Boğazköy bearbeitete, war die phrygische Unterstadt dieser Ruine noch wenig erforscht. So war Vorsicht beim Zeitansatz der dort gefundenen Doppelnadeln, die wohl als Haarnadeln verwendet wurden, geboten. Da, wie gesagt, die weitaus größere Zahl in Boğazköy auf Büyükkale in Zusammenhängen der jüngerphrygischen Zeit (BK I) gefunden wurde, erschien es gewagt, für die Exemplare älteren Fundorts (Abb. 1 a. b)[9] aus der Unterstadt eine Datierung ins 8. Jh. v. Chr.

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1) Parzinger, 1993, 305 ff.

2) Boehmer, 1972; ders. 1979.

3) Boehmer, 1972, 11.

4) Parzinger, 1993, 305.

5) Boehmer, 1972, Nr.545. 547.

6) Boehmer. 1972, Nr.548-553. Nr.546: BK Schicht Ib (?). 554: wenig über Fels, vermutlich BK I. 553: Schutt der Schicht BK I.

7) Schicht I setzt um 650 v. Chr, ein, vgl. z. B. R. M. Boehmer-H. G. Güterbock Beilage 1; Neve, 1993, 86 "Mitte 8.-Mitte 7. Jh. v. Chr.: Älterphrygische Periode, BK II b/a.-Mitte [versehentlich weggelassen RMB] 7./6. Jh. v. Chr.-Jüngerphygische Periode, BK I b/a."

8) Boehmer, 1972, Nr. 555.

9) Ebenda Nr. 530. 530A.

anzunehmen. Deshalb wurden sie ausdrücklich "mit Vorbehalt"[10] in die Zeit um 680 v. Chr. gesetzt. Die Datierung der später gefundenen Nadeln (Abb. 1 c. d)[11] schloß sich daran an.

Dieser Vorbehalt aus den 70er Jahren kann heute nach den Grabungen in der Unterstadt aufgegeben werden. Es gibt genügend gesichertes Material aus der Unterstadt, das eindeutig dem 3. Drittel des 8. Jhs. v. Chr. entstammt, wie beispielsweise Fibeln[12] order Keramik[13] erweisen. Auch die Fundlage der Nadel Abb. 1d aus dem "Schutt über der obersten hethitischen Bauschicht" kann dabei herangezogen werden.

Die Vermutung Parzingers wird also bestätigt; mit Nadeln wie Abb. 1 a-d und 2 a. b ist also zumindest vom letzten Drittel des 8. Jhs. v. Chr. an zu rechnen. Daß sie bereits davor bekannt waren, ist nicht völlig auszuschließen, jedoch z. Zt. nicht zu belegen. Dagegen spricht der Umstand, daß in den neueren Grabungen der 80er und 90er Jahre zahlreiche noch unpublizierte Doppelnadeln in jüngerphrygischen, BK I-zeitlichen Zusammenhängen gefunden worden[14]. Zu dieser Periode war diese Nadelform also, nach vereinzeltem Aufkommen zur älterphrygischen Zeit, in Boğazköy wohlbekannt.

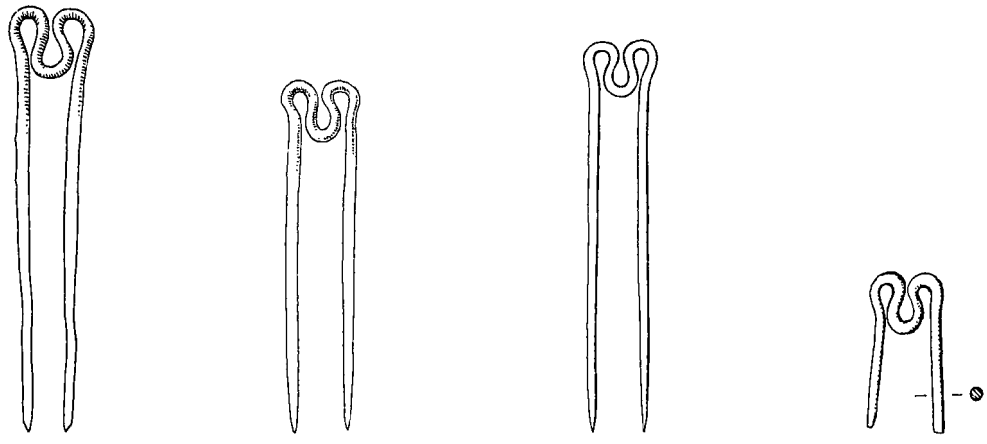

Abb. 1 Boğazköy. Doppelnadeln aus älterphrygischem Fundzusammenhang. M. 3:4.

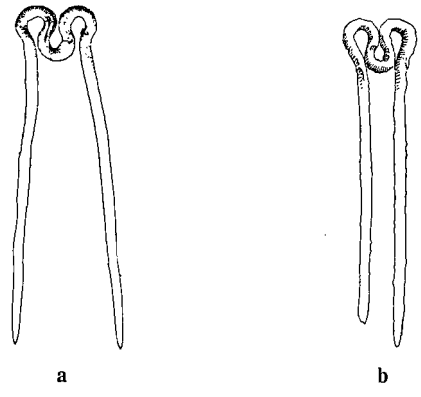

Abb. 2 Boğazköy. Doppelnadeln aus der Schicht Büyükkale I b (etwa 3. Viertel des 7. Jhs. v. Chr.). M. 3:4.

10) Ebenda Nr. 82.
11) Boehmer, 1979, Nr. 3093. 3094.
12) Ebenda Nr. 83A, 2520A, 2253–2524. 2528. 2529.
13) Wird zur Zeit aufgearbeitet.
14) Freundliche Mitteilung von P. Neve (mündlich).

Bibliographie

Boehmer, Rainer Michael

1972 Die Kleinfunde von Boğazköy aus den Grabungskampagnen 1931–1939 und 1952–1969, Boğazköy-Hattuša [= BoHa] VII (Funde Nr. 1–2470).

1979 Die Kleinfunde aus Unterstadt von Boğazköy, Grabungskampagnen 1970–1978, BoHa X (Funde Nr. 2471–3871).

Boehmer, Rainer Michael-Güterbock, Hans Gustav

1987 Glyptik aus dem Stadtgebiet von Boğazköy, BoHa XIV.

Neve, Peter

1993 Hattuša-Stadt der Götter und Tempel, Zaberns Bildbände zur Archäologie 8.

Parzinger, Hermann

1993 Phrygische Doppelnadeln aus Boğazköy-Zur östlichen Herkunft einer balkanischen Nadelform; Istanbuler Mitteilungen Band 43, 305–311.

HELLENISTIC CUNEIFORM WRITING FROM ASSYRIA: THE TABLET FROM TELL FISNA

Jeremy BLACK*

to Professor Hideo Fujii
in memory of times spent in Iraq during the 1980s

A site in the upper Tigris valley excavated by a Japanese expedition[1] yielded an extraordinary find the significance of which has not yet been generally recognised. It may be the only cuneiform tablet from northern Mesopotamia after 600 BC to have been found so far; and may be a testimony to the survival of cuneiform writing in that region until a date several centuries later than was previously believed. It is certainly one of the most unusual tablets ever found[2].

It is well known that northern Mesopotamia underwent very considerable cultural as well as political upheaval in the wake of the final collapse of the Assyrian Empire in or shortly after 612 BC. Assyria came under Babylonian or Median political control, possibly until the fall of the Babylonian Empire in 539 BC, but there is precious little clear evidence for the continuation of its earlier intellectual traditions.

Letters in Elamite from Nineveh are datable to the reign of Nabopolassar (625–605 BC)[3]. The three documents in Elamite from Argištiḫenele in Armenia may actually be later than the seventh century BC[4]. Some Neo-Assyrian documents from Dūr-Katlimmu are dated to the years 603–600 BC[5], and some letters from Tell Ḥalaf are 'Neo-Babylonian' in date[6]. The Achaemenid Cyrus II appears to have encouraged the revival of Nineveh[7], and some cities of Assyria were accessible and moderately well-preserved under the Achaemenid kings[8]. A document in Akkadian cuneiform, of Achaemenid date, from Ṭawīlān in Jordan was in fact written at Harran in Syria. A second Akkadian document, dated in the reign of Darius I, has been found at Tyre on the Mediterranean coast but was originally written in Babylon[9]. Conversely, various documents found in Babylonia appear to have been brought there from outside the region[10]. In Iran during the Achaemenid Period, three types of cuneiform were in use, to write three different languages: Akkadian, Old Persian and Elamite, the last of which was extensively used.

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1) See Numoto 1987:43–49 (with a cuneiform copy on p. 48 by Professor Mamoru Yoshikawa). The site was excavated from October 1983 to June 1984; see Black and Killick 1985:230–1.

2) The writer is grateful for information provided by, and discussion with, several Japanese colleagues, especially Mr. Hiroyuki Ii (field director) and Professsor Mamoru Yoshikawa, as well as Dr. S.M. Dalley, Professor M.D. Roaf, Mr. C.B.F. Walker and Professor H.E. Hunger. The excellent photos reproduced here were published in the catalogue of an exhibition held in Osaka in 1987, 'The Nara International Foundation commemorating the Silk Road Exposition', by the kindness and courtesy of whose organisers they were made available to me.

3) See Dalley 1993:143–4.

4) See Diakonoff and Jankowska 1990:102–123; Koch 1993:219–236. The building in which they were found was dated to the 8th–7th centuries BC, but 'the stratum contained some later intrusions', although a later date for the tablets was denied by Diakonoff, see Stève 1992:24.

5) See the articles by Kühne 1993, and Postgate 1993; also Brinkman 1993, Fales 1993, and Röllig 1993a and 1993b.

6) See Dalley 1993:137 and :141.

7) See Dalley 1993:134.

8) See Dalley 1993:136.

9) While the tablet from Tyre is dated to Darius I, it is not clear whether the Tawilan document is dated to Darius I or another later Darius [Dalley 1993:137]. See the new edition of the Tawilan document by Dalley 1995.

10) See Dalley 1993:141–3.

But from northern Mesopotamia itself there is nothing later than the Neo-Babylonian Period[11], and after the end of the Achaemenid Period, say the mid-fourth century BC[12], it has to be said that there is not really any evidence for cuneiform writing anywhere outside southern Mesopotamia, whereas in some cities of Babylonia traditional Mesopotamian intellectual culture continued to develop and survived until at least the first century AD in an uninterrupted continuum.

Tell Fisna was the site of a small rural settlement, a smallish mound at the confluence of the river Robal with the Tigris, on the latter's east bank about five and a half kilometres north of the important local urban centre represented by the mound Tell Jigan (40 km. north of Mosul as the crow flies) within the area of the Saddam Dam Basin Salvage Project. It was investigated by a Japanese team under the overall direction of Professor Hideo Fujii during the salvage excavations. The heavily eroded tell had a wide range of occupation levels from the Nineveh V Period to the Islamic. Traces of a Hellenistic level (level 2) were found all over the excavated area, with remains of buildings constructed of two regular sizes of mud bricks and with stone basements. In one of numerous pits (pit 1, Grid G1-IX) which are likely to have been dug down from a level now eroded, but which were assigned to this period of occupation, a variety of lamps, 'clay doughnuts', spindle whorls, animal bones and potsherds were discovered, and amongst these a fragment of a baked clay tablet. The lamps and the pottery confirm the likelihood of a general date for the contents of the pit in the Hellenistic Period, but it should be remembered that this is a secondary deposit. Certainly, however, the tablet can hardly be dated to the previous level of occupation ('Nuzi', clear from the pottery types) nor to the succeeding level (Islamic) so that, insofar as the tablet originated at this site, the broad 'Hellenistic' date is *prima facie* convincing. It can at the very least be assumed that it is a genuine artefact and not, despite its peculiarities as described below, a counterfeit. It is one of very few tablets found in northern Mesopotamia from after the fall of the Assyrian Empire in 612 BC.

The tablet fragment[13] as preserved measures 5 x 7.8 cm, by about 1.8 cm thick (maximal dimensions; now registered as IM 95332). It is difficult and probably impossible to tell the obverse from the reverse, both because it has the shape one associates more with Romantic paintings of the Ten Commandments than that of a conventional tablet, i.e. is more or less flat on both sides with a flat edge all round (rather than being pillow shaped) (this is not obvious from the photograph but is striking when the tablet is examined) — and because it turns not top to bottom as a normal tablet but from left to right, like the Hellenistic tablets with cuneiform and Greek script from Babylonia[14]. No clear indication is given by the first section on either side of its being the beginning of a text, but perhaps side B is less likely to be the beginning because of the absence of any introductory material. (The beginnings of the first lines of side A are damaged.)

It appears to be divided into a number of sections on each side, separated off from each other by a horizontal ruling, in each of which a passage of text is written. In the course of each of these passages of text, numbers appear, virtually always in ascending order, irregularly up to but not above 30, and it therefore seems very likely that these passages of text each pertain to observations, prescriptions or events relevant to the days of one month, and that there were originally six sections on each side of the tablet so that it covered the whole of one year. If so, the original size would be about one third higher, and a little wider, maybe 7 cm., producing a very typical proportion and size for a Mesopotamian tablet.

The cuneiform writing is rather upright, and superficially resembles Neo-Assyrian script. It is careful and neat, if a little laborious. Where superimposed vertical strokes (i.e. 'broken verticals') occur, the full-length descenders of the upper strokes are carefully allowed to remain visible to the left of the lower ones. It does give the impression, however, of having been written by someone familiar with

11) The existence of a tablet said to be from Yarım Tepe is difficult to establish.

12) The latest would be the Elamite cuneiform inscriptions of Artaxerxes II (404–359 BC) from Susa, see Stève 1992:23f.

13) See the writer's copy, Fig. 1, and the photographs, Pl. 1a and 1b.

14) See Sollberger 1962:63.

what they were writing and used to writing it. The signs are precisely formed and are identical when they recur. None the less — and this is the extraordinary thing — a conventional transliteration of the text is impossible to give since, while the numeral signs can be satisfactorily deciphered in most cases, not a single one of the other signs can be identified convincingly. The identity of those which appear to resemble known signs cannot be established since the signs to left and right of them are invariably unidentifiable and no context can be created. Several signs, mostly at the righthand side, incorporate downward strokes slanting from right to left — a stroke-type absent from standard forms of cuneiform, although known from some Neo-Assyrian literary hands from Kalḫu. Some signs look like complicated forms of known Neo-Assyrian signs elaborated with additional small strokes. Many are more complicated than most cuneiform signs, and not every Assyriologist would agree about the point of separation of one sign from the next. Consequently the procedure adopted here is to transliterate the numeral signs in the normal way and to give conventional transliterations in small capitals for those signs which resemble known signs (such as ŠÚ, A, SIG and ÁŠ), with damaged signs indicated as 'x'; and to identify the others by bold upper-case letters, according to the table appended[15], so that at least their frequency and sequence can be contemplated. The frequency of the different numeral signs can also be tabulated. This attempt is offered here in the hope that other scholars will make further progress.

This unreadable cuneiform writing suggests several implausible possibilities:

(i) It is a form of writing deliberately designed to be cryptographic because of the nature of its contents. This is conceivable but unlikely inasmuch as, by the probable Hellenistic date of this tablet, cuneiform writing itself would have been inaccessible enough to the vast majority of people (certainly in Assyria) and it might be thought sufficiently obscure to write straightforward cuneiform. (ii) It is a form of cuneiform written by someone unfamiliar with the script and so an incompetent attempt. I consider that the evident carefulness of the writing makes this explanation unlikely. (iii) It is an ancient fake, imitating real cuneiform. Some readers will be acquainted with the rather common early twentieth-century AD fakes from Babylon, which use familiar elements of signs. The sign forms and the dextrous use of the stylus argue strongly against this.

More likely, it is a form of cuneiform representing a late, possibly a very late, development of the script in which the numeral signs had not changed very much but in which other signs had undergone a radical evolution from the forms known from the seventh century BC. It would have to be assumed that this evolution was completely independent of the continuing tradition of cuneiform writing in southern Mesopotamia, which is abundantly attested for Uruk and Babylon, and also at Borsippa, Kutû, Kiš, Nippur, Larsa, Ur, Seleukeia, and Dēr[16]. It would have to be borne in mind that the Hellenistic date suggested by the contents of the pit cannot be confirmed for the tablet; nor, strictly speaking, can its origin at or even in the vicinity of Tell Fisna. It could possibly have been brought there from somewhere else. Only wider excavation of Hellenistic north Mesopotamian sites will give further clues to solve this riddle.

The shape of the tablet and the fact that it turns left to right are further curiosities. It is possible that the shape could have been dictated in some way by the tablet's content e.g. if it were intended to be exhibited somewhere like an amulet or like the well-known hemerology from Kalḫu (which, however, is pierced for suspension but turns top to bottom)[17]. The cuboid shape of the Tell Fisna tablet, so unlike the traditional pillow, might be explained if it was written at a late date by which the traditional shape of tablets had been forgotten and when scribes were more familiar with other models such as monumental stone inscriptions or conceivably even books.

In its general format, with numbers in ascending order, up to but not above 30, and with (hypothetically) six sections on each side of the tablet covering the twelve months of one year, the layout

15) See Fig. 2.

16) See Oelsner 1986, chapter 3.

17) See Wiseman and Black 1996, CTN IV no. 58 = Hulin 1959:42–53.

of the text is very similar to so-called 'hemerologies' or statements of lucky and unlucky activities for various days during the months of the year, well known from the Standard Babylonian tradition[18].

But given the probable date of the Tell Fisna tablet, it may be as well to consider other types of astrological and astronomical text also. Of these, some are known exclusively from the late (Achaemenid or even Hellenistic) tradition from Babylonia, and not from the earlier Standard Babylonian literary-scientific tradition which existed in Assyria until 612 BC. Among these a number of categories can be discarded as unlikely:

1) Horoscopes (Babylonia, from 410 BC)[19] generally contain mostly words and very few numbers.

2) Ephemerides (Babylonia, Hellenistic Period) are written on tablets which are often very wide compared with their height[20], because of many parallel columns. They too are almost exclusively numeral, with many repetitions, and often set out in tabular form.

3) Astronomical diaries (Babylonia, Hellenistic Period)[21] generally cover the first or second half of a year, and give almost day by day recordings. At the end of each section, commodity prices, river level etc. are listed.

4) *enūma Anu Ellil* (Standard Babylonian tradition) is not preserved in this format.

5) Normal-star almanacs (Babylonia, Hellenistic Period)[22] include a colophon and a vertical column near the lefthand edge of the tablet.

6) Goal-year texts (Babylonia, Hellenistic Period)[23] have paragraphs divided according to planets, with a colophon.

The category of hemerologies is an altogether more plausible candidate. However, these (Standard Babylonian) works usually list *all* the days in a month[24]. It seems that the closest parallel would be a hemerology, but of a selective kind.

True astronomical almanacs are not present in the Standard Babylonian tradition, and therefore not attested in Assyria before 612 BC, since the so-called (Standard Babylonian) 'almanacs'[25] are really hemerologies. But the possibility remains that the Tell Fisna text is such an astronomical almanac, albeit of an unconventional type. Almanacs (from Babylonia in the Hellenistic Period)[26] generally include colophons. The end of the Tell Fisna text is missing, so this cannot be excluded. These Hellenistic Babylonian almanacs normally cover one year and are divided into 12 or 13 paragraphs, each beginning with the name of a month, followed by '1' or '30', and also recording among other data the lunar phenomena NA and KUR (the latter denoting the last visibility of the moon). Now the distribution of numbers occurring in the preserved portion of the Tell Fisna text appears to cluster very roughly round the lunar phases, and this could argue in favour of its astronomical nature[27]:

1 (occurs once)
2 (occurs 2x)
5 (1x)
6 (3x)
7 (2x)
8 (2x)

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18) See Labat, 'Hemerologien', in *Reallexikon der Assyriologie* 4.
19) See Sachs 1952:49–52.
20) See Neugebauer 1955, vol. I:1.
21) See Sachs 1948:285ff.
22) See Sachs 1948:281f.
23) See Sachs 1948:282–5.
24) The comparable texts designated as menologies name only the months, and not the individual days.
25) See Labat 1941:13ff., and 'Hemerologien', in *Reallexikon der Assyriologie* 4.
26) See Sachs 1948:277–280.
27) The following data were collected by Professor Hermann Hunger and passed to me by Mr. C.B. F. Walker.

12 (1x)
13 (1x)
15 (3x)
16 (3x)
17 (1x)

19 (1x)
20 (1x)
21 (2x)
22 (1x)
23 (1x)

26 (2x)
27 (2x)
28 (2x)
29 (3x)
30 (2x)
(The numbers omitted from the list do not occur.)

An admittedly hypothetical and speculative scenario might then be along the following lines. In (remote parts of) northern Mesopotamia a cuneiform tradition survived the end of the Achaemenid Empire and continued to develop. Separated from any contact with the unbroken mainstream tradition which remained alive in Babylonia until at least the first century AD, this northern tradition evolved in its own way, with gradual change of many of the sign forms (but not of the numeral forms, which remained much as they had been before), and continued in use amongst specialist astrological diviners whose use of it was perhaps restricted to the writing of selective hemerologies recording lucky and unlucky activities for certain days.

If we incline to the alternative hypothesis, of astronomers who in parallel with, but presumably independently of, their southern Babylonian colleagues, used cuneiform to record their observations of the heavens in the form of almanacs unconventional by Hellenistic Babylonian standards, it remains difficult to account for the separate evolution of such a scientific tradition in the north, as the style of writing of this tablet would imply. The overall likelihood is that it represents a type of text which already existed in the north before 612 BC, i.e. was already present in the Standard Babylonian tradition copied in Assyrian libraries (unless it is influenced by Hellenistic Greek documents). The rather complicated cuneiform signs might argue in favour of restriction to a specialised use.

An attempted transliteration follows. (MN = month name; x = damaged sign; signs in bold capitals are identified in Fig. 1.)

Side A (obv.?)

1] x 19 **B** ÁŠ x **H** SIG ŠÚ
] x x **R W F** 30 **E**

] 5 **D** 6 **L** x x x
] **A** 26 **F** 28 **B**
5][x] **Y** U **J** x 29 **E**

] x **P A** 13 **B** ÁŠ **G**
] x 20 KÚR **J** x U x x **A**?
] x x **A C W X Y** x 26
] x x **K N A** 27 **F** 29 **E**

] x **H** 30 ŠÚ **B** x **P A** 6 **B**
]⌈**K**⌉ **S P A** 12 **B A**? **Q**? x
] 16 17 **L M** x x **G N P A**
]⌈x **T V**⌉ U **K** 6 **A** 22
(remainder broken)

Side B (rev.?)

MN_1? 7 **B M Q** BAR 5 [
ŠÚ **T V** U **K** 8 **A** 30 [

MN_2 7 **B** ÁŠ **G H** SIG ŠÚ A [
16 23 **L** x x **Z** U [
8 **A** 27 **F** 29 **B** [

MN_3 1 **B H** x **G H** ŠÚ x [
C 15 ŠÚ **D** 21 x x x [
B X Q x **E R** [
21 AŠ 20 ÁŠ **G H** x ŠÚ x **Z** U ⌈**K**⌉ [
F x **C** 28 ŠÚ **D** x 3 x [
ŠÚ x **K S P A C** x [

MN_4 2 **B** ÁŠ x x x [
] x x x [
(remainder broken)

The frequency of the signs in the preserved portion of the text can be listed as follows[28]:

A (12 times)
B (13)
C (4)
D (3)
E (4)
F (5)
G (6)
H (6)
J (2)
K (6)
L (4)
M (2)
N (2)
P (5)
Q (2)
R (2)
S (2)
T (2)
V (2)
W (2)
X (2)
Y (2)
Z (2)

A (1), AŠ (1)

28) Data compiled initially by Professor Hermann Hunger and passed to me by Mr. C.B.F. Walker.

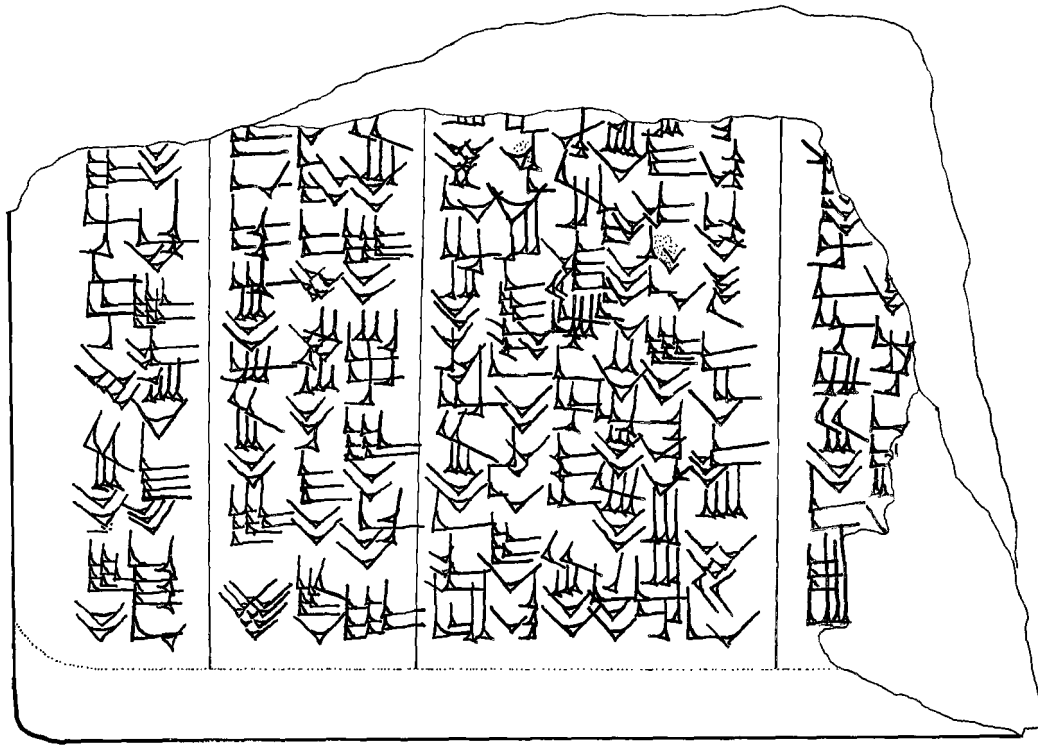


Fig. 1b Side B (rev. ?)

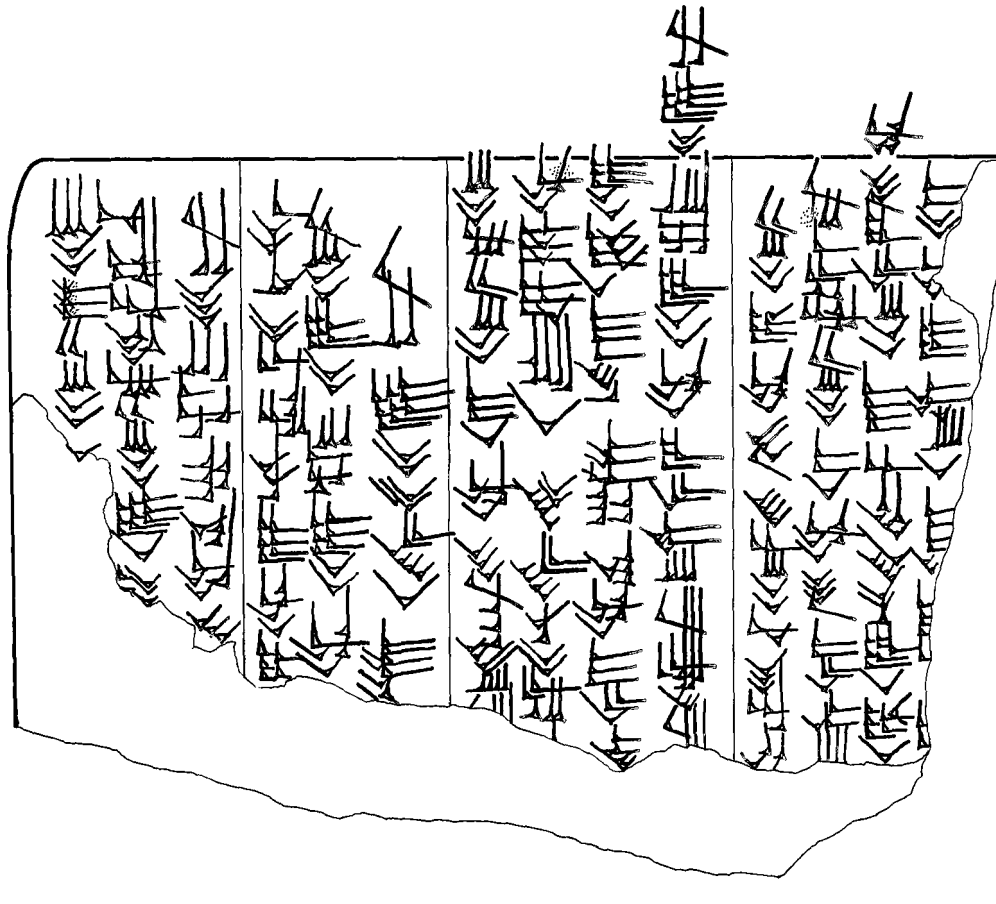


Fig. 1a Side A (obv. ?)

ÁŠ (5)
BAR (1)
KÚR (1)
SIG (2)
ŠÚ (9)
U (6)

MN_1, MN_2, MN_3, MN_4 (1x each)

Sequences of signs occurring more than once are:

T V U **K** (2x)
B ÁŠ x **H** SIG ŠÚ, cf.:
B ÁŠ **G**
B ÁŠ **G H** SIG ŠÚ
B H x **G H** ŠÚ
ÁŠ **G H** x ŠÚ
ŠÚ **D** (2x)
Z U (2x)
A 27 **F** 29 (2x)
8 **A** (2)

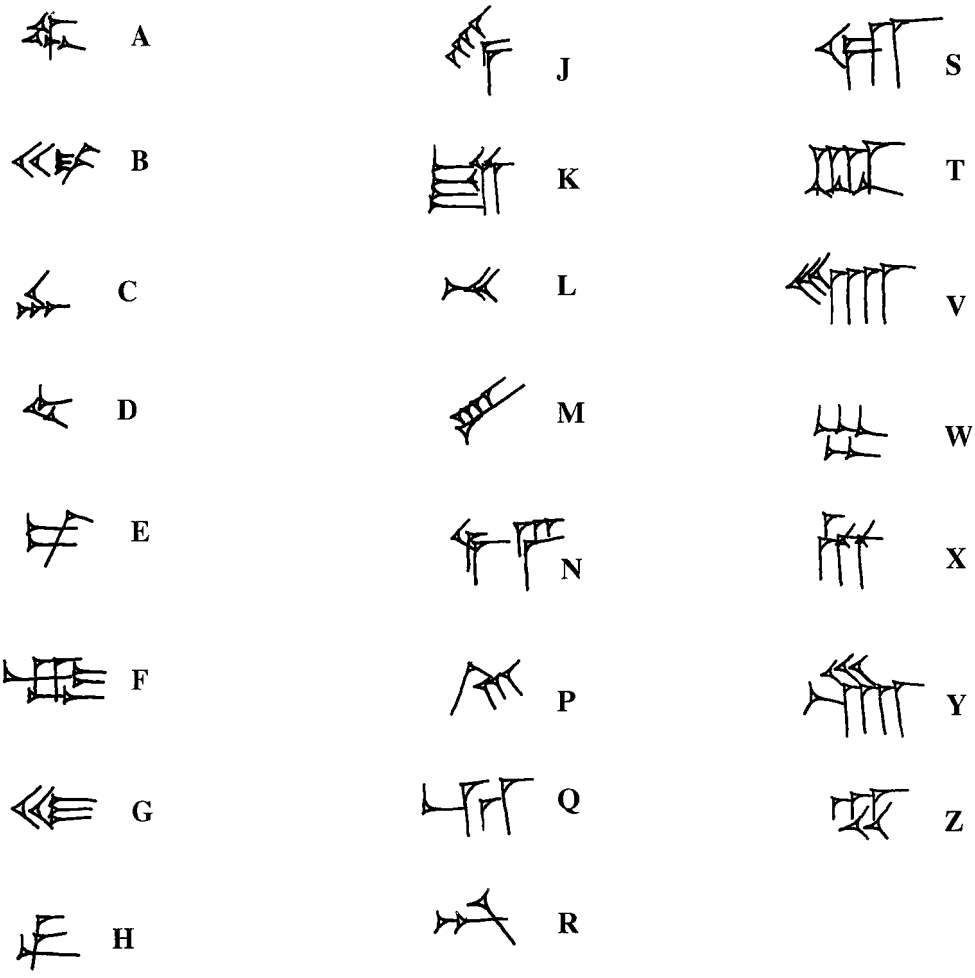


Fig. 2 List of signs, identified by letter.

As final groups in sections note:

F 29 **E**
29 **E**
F 30 **E**.

References

Black, J.A. and R.G. Killick
1985 Excavations in Iraq, 1983–4, *Iraq* 47:230–1.

Brinkman, J.A.
1993 Babylonian influence in the Šēḫ Ḥamad texts dated under Nebuchadnezzar II, *State Archives of Assyria Bulletin* VII/2:133–8.

Catalogue of an exhibition held in Osaka
1987 The Nara International Foundation commemorating the Silk Road Exposition.

Dalley, S.M.
1993 Assyria after 612, *Altorientalische Forschungen* 20/1:134–147.
1995 The cuneiform tablet, in C.-M. Bennett and P. Bienkowski, *Excavations at Tawilan in southern Jordan*, British Academy Monographs in Archaeology 8 (Oxford), pp. 67–68.

Diakonoff, I.M. and N.B. Jankowska
1990 An Elamite Gilgameš text from Argištihenele, Urartu (Armavir-blur, 8th century BC), *Zeitschrift für Assyriologie* 80:102–123.

Fales, F.M.
1993 West Semitic names in the Šēḫ Ḥamad texts, *State Archives of Assyria Bulletin* VII/2:139–150.

Hulin, P.
1959 A hemerological text from Nimrud, *Iraq* 21:42–53.

Koch, H.
1993 Elamisches Gilgameš-Epos oder doch Verwaltungstäfelchen?, *Zeitschrift für Assyriologie* 83:219–236.

Kühne, H.
1993 Vier spätbabylonische Tontafeln aus Tall Šēḫ Ḥamad, Ost-Syrien, *State Archives of Assyria Bulletin* VII/2:75–107.

Labat, R.
1941 Un almanach babylonien (VR 48–49), *Revue d'Assyriologie* 38:13–40.
1972–5 Hemerologien, in *Reallexikon der Assyriologie* 4, pp. 317–323.

Neugebauer, O.
1955 *Astronomical cuneiform texts,* 3 vols. London.

Numoto, H.
1987 Tell Fisna, in Hideo Fujii, 'Working report on first season of Japanese Archaeological Expeditions in Saddam Salvage Project', in *Research(e)s on the antiquities of Saddam Dam Salvage Basin and other researches*, Baghdad: State Organisation for Antiquities and Heritage, Saddam Dam Basin Salvage Project, pp. 43–49.

Oelsner, J.
1986 *Materialien zur babylonischen Gesellschaft und Kultur in hellenistischer Zeit*, Budapest.

Postgate, J.N.
1993 The four "Neo-Assyrian" tablets from Šēḫ Ḥamad, *State Archives of Assyria Bulletin* VII/2:109–124.

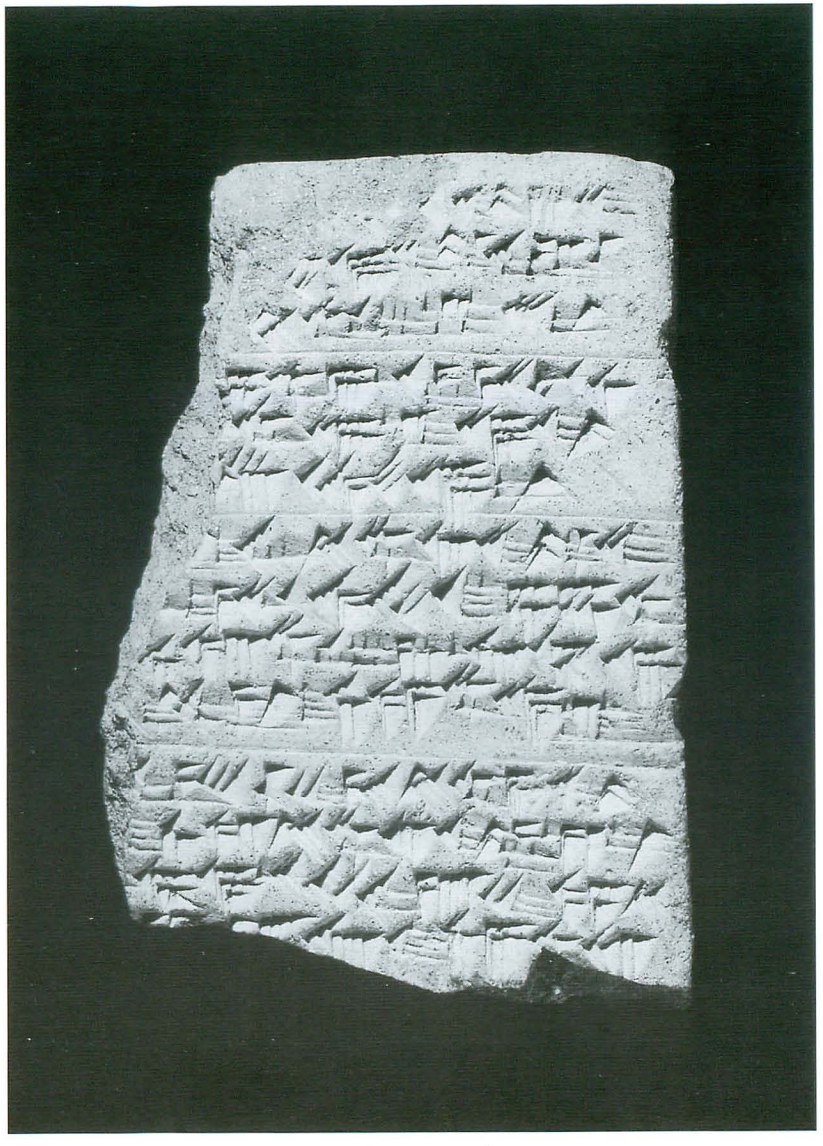
Röllig, W.
1993a Zur historischen Einordnung der Texte, *State Archives of Assyria Bulletin* VII/2:129–132.
1993b Die aramaischen Beischriften auf den Texten 1 und 3, *State Archives of Assyria Bulletin* VII/2:125–128.

Sachs, A.
1948 A classification of the Babylonian astronomical tablets of the Seleucid Period, *Journal of Cuneiform Studies* 2:285ff.
1952 Babylonian horoscopes, *Journal of Cuneiform Studies* 6:49–52.

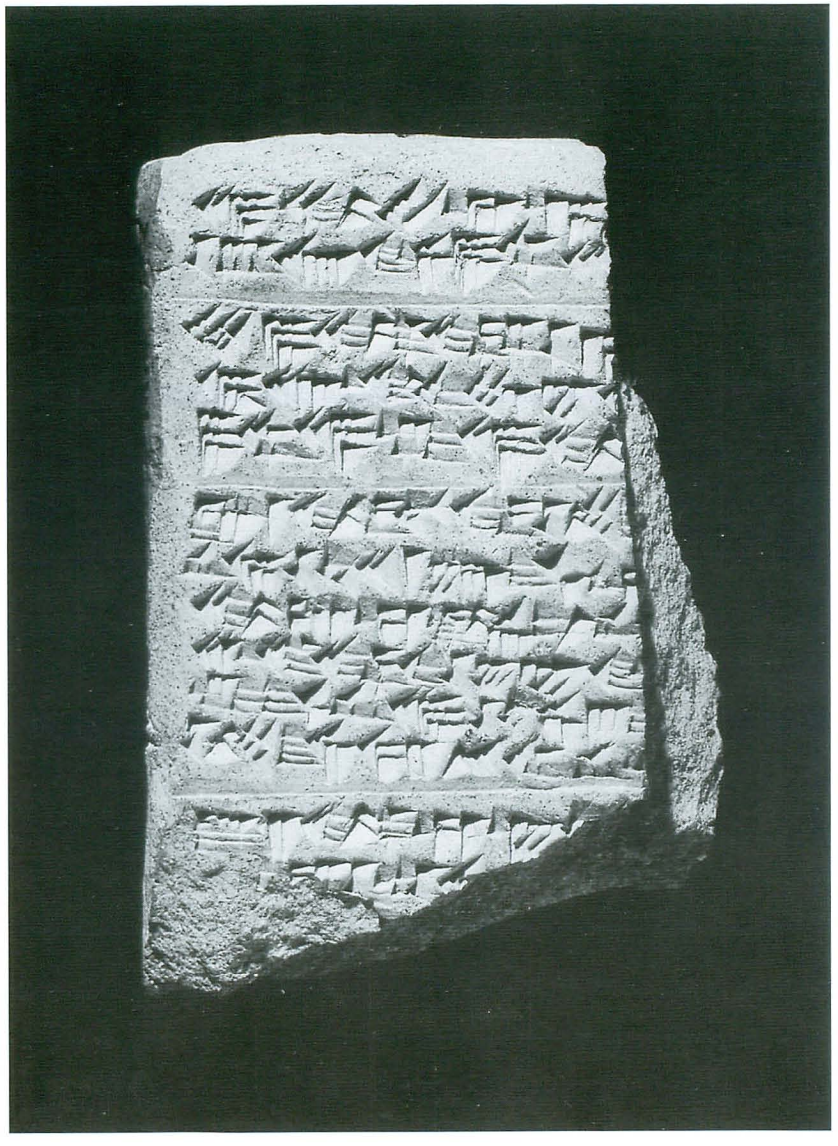
Sollberger, E.
1962 Graeco-Babyloniaca, *Iraq* 24:63.

Stève, M.-J.
1992 *Syllabaire élamite: histoire et paléographie*, Neuchâtel/Paris.

Wiseman, D.J. and J.A. Black
1996 *Literary texts from the temple of Nabû*, CTN IV, Oxford: British School of Archaeology in Iraq.



a Side A (obv. ?)



b Side B (rev. ?)

NEAR-EASTERN INCENSE-BURNERS AND PYRAEUMS (I MILLENNIUM B.C. – I MILLENNIUM A.D.)

Antonio INVERNIZZI*

A tribute of incense to Hideo Fujii

The evidence concerning the use of aromatic substances in various fields of public and private life in antiquity is substantial, though the distribution over time and space of the various relevant types of artifact is not uniform. The representations of fumigation or burning practices in which aromas may possibly have been used are numerous and sometimes explicit. In some cases, such as that of the ointments, balsams, spices, scents and perfumes to be poured or spread on the body or on objects, no special classes of artifacts seem to have been developed according to their mode of use. These essences are normally preserved in a container which is suitable both for conservation and for employment, and this container was less suited to appearing in iconography. Among the classes of objects possibly related to aromas, however, one in particular demands attention because of the evidence of its employment in the diffusion of the perfume of incense or other aromatic substances.

1. Assyrian and Achaemenid incense-burners

In Assyrian art, these objects appear at the court and in the temple, being used in representational and sacrificial contexts. Typical examples are the two incense-burners placed on the ground on each side of the bed on which Ashurbanipal reclines as he banquets in the garden (Fig. 1)[1]. They are of unpretentious size, but their structure is conceived in a characteristic way: a flaring stand (conical in one, trumpet shaped in the other; with vertical fluting), a joint at the top (a double floral tuft with pendent leaves of the type common in furniture[2]), a receptacle (a shallow bowl) and a lid (a smooth dome, more conical in one case, more rounded in the other). A variant of larger size is represented in a libation performed by Ashurbanipal after the lion-hunt (Fig. 2)[3]. The trunk is smooth, slender and widens considerably in a trumpet shape; it has a torus moulding in place of the floral tuft; the bowl is similar to the former one; the lid, also smooth, is conical. This finial proves beyond any doubt the function of the object: it was intended to collect the fragrant smoke before dispersion.

The use of this type of incense-burner was not limited to the Assyrian court. A smaller version of it is represented by a limestone original object of the 6th century B.C. from the sanctuary of Baal Hamman at Meniko, Cyprus, only 8.5 cm high (Fig. 3)[4]. The bowl has straight sides and a hemispherical lid, and is supported by a flaring stand decorated by two large rounded joints instead of a floral tuft. Other censers of the same provenance and date, of terracotta (Fig. 4)[5], have a particularly articulated profile: the carinated bowl, which has a conical lid with large ring-grip, stands on three small superimposed dishes or discs; the trumpet stand ends in a hanging tuft below a bossed element or half-opened floral tuft[6]. The detail of the superimposed discs or dishes is found again in the incense-burner depicted

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1) Barnett, Lorenzini 1975: pls.169–170. For the Assyrian cencers, cf. Wigand 1912: 18–21, pl.II, nos.41–46.

2) Hrouda 1965: pl.13:3,5,7.

3) Barnett, Lorenzini 1975: pl.125. For censers used in sacrifices by Salmanassar III and Tiglat-Pileser III, see King 1915: pl.i; Barnett, Falkner 1962: 18–19, pl.lx; Hrouda 1965, pl.52:4.

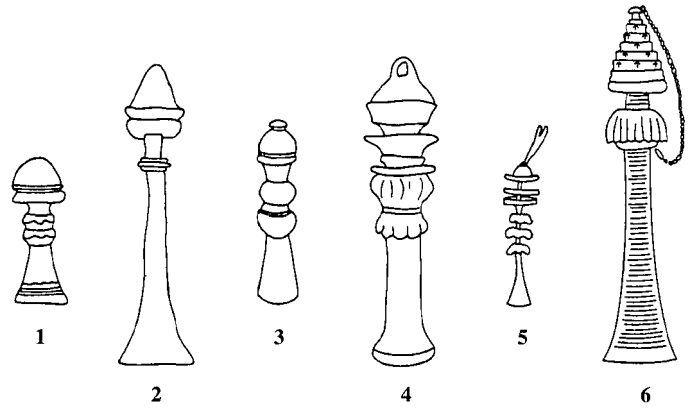
4) *Fenici* 1988: 609, no.153.

5) Karageorghis 1982: 148, fig.113 (h. 38 and 36.6 cm); *Fenici* 1988: 162.

6) Because of the shape of the cylindrical stand and of the short distance of the discs, these can hardly have been used effectively as dishes as they probably were in the Phoenician type with superimposed bowls, *Fenici* 1988: 611, 645, 667, nos.164, 363–364, 494.

between a worshipper and an enthroned god on an intaglio of the 4th century B.C. from Sidon (Fig. 5)[7], where the tall, slender stem on triangular base is marked by three superimposed pendent tufts and three dishes. The small dome placed on the upper dish may represent the lid, and a wisp of smoke rises from it.

Clear evidence of incense-burners is provided by Achaemenid art, for objects of this kind were required by the rigid court etiquette in ceremonies like those depicted on the two large reliefs from the Treasury at Persepolis: a couple of identical censers (Fig. 6) stand on the ground, close to the throne dais on which the king, accompanied by the crown prince, receives homage[8]. This piece of furniture is worthy of the royal pomp in its size and rich decoration, though its structure is very simple. The treatment of the high trumpet stand with horizontal ribbing, and the ending of the stem in the shape of a pendent, almost capital-like tuft, are typical features. Also typical is the stepped conical lid on the shallow plate with rounded profile: while the lower band of the rim is smooth, there are staggered arrow-slits in the upper bands. A chain is fixed to the high finial and links up at the opposite end with a loop below the capital.



Figs. 1–6 Censers; not to scale.

Two not much smaller censers stand close to the throne with no dais in the reduced version of the same scene carved on the door-jambs of the Hall of the Hundred Columns[9]. Ghirshman's reference to the fire-altars[10] is not relevant either to the subject of the scene or to the shape of the object. Though there is no doubt that this censer was not exclusively employed in the palace[11], the context here is clearly the court, and Ghirshman himself describes the scene as an audience. As a fire-altar the censer would scarcely be functional, for the eternal flames would be hampered by the lid[12]. The same incense-

7) Parrot, Chéhab, Moscati 1976: 110, fig.115. The structure of this object recalls the bronze one with two dishes and triangular base from the La Joya necropolis, Gehrig, Niemeyer 1990, 218-219, no.201.

8) Schmidt 1953: pls.119, 121–123; Vanden Berghe 1959: pl.42:d; Ghirshman 1964: 205–206, 349, figs.254–255, 443; Goldman 1991: 179–188, fig.1; Melikian-Chirvani 1994: 111–130, fig.2. Cf. Wigand 1912: 31–32, pl.II, no.58. The two objects are close to each other, but in reality they were symmetrically placed at the sides of the platform, as was already noted by Sarre, Herzfeld 1910: 143. Cf. Goldman 1991: 184.

9) Schmidt 1953: pls.98–99; Vanden Berghe 1959: pl.42:a; Goldman 1991: fig.2.

10) Ghirshman 1964: 205–206.

11) A seal from Ur shows a censer in a religious context, in front of a human-headed winged bull, Stern 1973: 212, fig.354 (altar). The object differs from the Persepolitan one only in the large disc replacing the floral tuft.

12) The fire altar of the Achaemenid graves has stylized flames and no lid. Goldman's terminology (1991: 180), *thymiatherion and turibulum*, for the type respectively without and with lid, in an attempt to distinguish the purely religious function of the first from the generic and domestic one of the second, is not a happy choice, for both are cultivated terms and evoke a context far from everyday life.

burner was also produced in a portable format: we see it in the hands of the king's attendants carved on the jambs of the Darius and Xerxes palaces, where it has relatively small dimensions[13].

Original objects found in the western provinces of the empire are very similar to the Persepolitan ones, even down to the minute details. A silver example from Asia Minor (Fig. 7)[14], only 28.2 cm high, could have stood on the ground or on a table or high base. That from a grave in Ikiztepe in Lydia[15] repeats the same pattern, though without the typical Achaemenid ribbed treatment of the surfaces. Also smooth is the trumpet stand of the bronze specimen, 33.5 cm high, from an Achaemenid grave in Shechem, in Palestine (Fig. 9)[16], fabricated with separate parts fitted together. A large pendent tuft connects the stand and the low ringed cylinder which helps to fix the deep round bowl. The vertical rim of the bowl makes it easier to insert the lid. This was fixed by means of a small bronze chain, but left no trace, so that it has been suggested that it was of wood or some other perishable material.

Thus, this type of incense-burner was well known in different parts of the Achaemenid empire, and most objects of this age, even if they are portrayed schematically or cursorily[17], show the structure of the Persepolitan type. Special variants are also known: a textile from kurgan n.5 at Pazyryk is decorated with a scene at the centre of which, on the ground, a large incense-burner (Fig. 10) stands between two couples of female figures[18]. Its structure and all its distinctive features are those of the Persepolitan type: slender conical stand, pendent tuft, plate, lid (oval) and chain. However, the details of the workmanship link it with Ionic specimens, so that, in spite of its provenance from beyond the eastern borders of the empire, the textile has been thought to have been produced by an atelier of a western satrapy[19].

Incense-burners of a different type were also used in the Achaemenid empire. Of the Persepolitan type only the stepped conical lid remains in a bronze censer from Asia Minor of the Menil Collection (Fig. 11)[20], which in other respects reflects a western taste. In place of the characteristic trumpet-stand, the brazier dish is supported by a long thin stem on a tripod. The bronze item, of far greater decorative richness, found in the Achaemenian grave of Umm Udheinah, near Amman (Fig. 12)[21], also leaves a wide space to classical influences. The deep bowl is held on the head of a caryatid in Achaemenian dress, rigidly standing on a simple tripod, while the surfaces of the high domed lid are marked by openings of different shapes in superimposed rows.

Of fundamental importance in these incense-burners is the lid, which is essential to their function, though its specific mode of use may have differed between the Assyrians and the Achaemenids. In the first case, it is depicted as smooth; no openings are described, even when the reliefs are minutely carved

13) Schmidt 1953, pls.148B, 150, 183D-184; Goldman 1991: fig.3. Cf. Wigand 1912: 31–32, pl.II, no.59. Melikian-Chirvani's statement that there are no representations of portable censers at Persepolis (1994: 130, note 52) must be corrected.

14) Melikian-Chirvani 1994: figs.1, 18; cf. the colour riproductions in *Archeo*, 120(1995), 86–87, where a provenance from Ikiztepe is supposed. Melikian-Chirvani thinks it to be an import from Iran because of the corrugated treatment of the surfaces. In Lydia, the name 'Artymas', would have been scratched on the base and the statuette of the cock added as a finial. However, this corrugated treatment, though certainly a most characteristic feature of Achaemenian toreutics, does not necessarily imply a specifically Iranian production. In the 6th century B.C., this same treatment is attested very far away, in a Punic milieu, at Lebrija (Sevilla), by a couple of golden censers (Fig. 8), *Fenici* 1988: 228, 725, no.831. A very small dish is here supported by a slender cylindrical, thickly corrugated stem connected by a sharp disc to the low corrugated trumpet stands. Because of their height (70.5 cm) these artifacts are worthy of the court furnishings. Their manifacture can hardly have been independent from the handicraft of Achaemenid Asia. Whether produced in a Punic context or brought to Spain by Phoenicians, they clearly reflect in any case the Achaemenid imperial taste.

15) Mellink 1967: 172, pl.59, figs.20–21; Melikian-Chirvani 1994: 123.

16) Stern 1980: 90–111, fig.6:1, pl.xiv:a.

17) Goldman 1991: 184–185, pl.xviii.

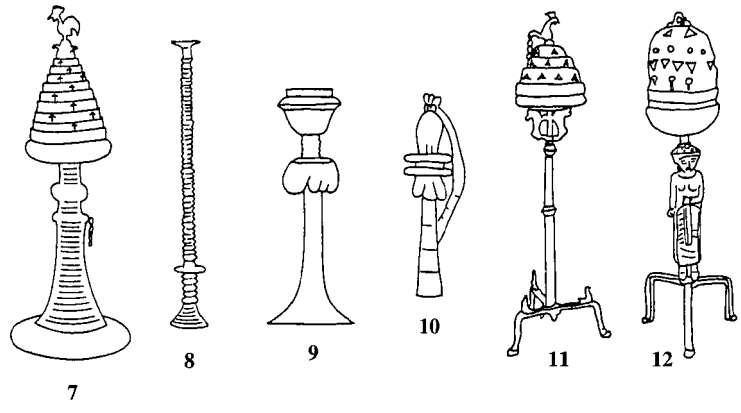
18) Rudenko 1970: 296, fig.139. Goldman 1991: 179 rightly does not agree with Culican's 1975: 111–112, interpretation as an ampulla on a stand.

19) Zick-Nissen 1966: 569–8; Goldman 1991: 179, 185.

20) Melikian-Chirvani 1994: 123–125, figs.16-17.

21) Khalil 1986: 103–110; *Voie royale* 1986–1987: 144–145, no.187; Goldman 1991: 184, pl.xviii:B. Cf. Moorey 1973.

in full detail. We must therefore suppose that it did not fit on to the bowl very tightly, or that narrow slits opened at the base or the top, of a shape and in places that were difficult to depict in the reliefs. Openings not only served to free the fragrant smoke, but also to oxygenate the combustion. By contrast, the large number and the overall distribution of the slits for a continuous dispersion of the fragrance are among the most typical features of the Achaemenid types.



Figs. 7–12 Censers; not to scale.

2. Multifunctional models

The pattern showing a receptacle on a high flaring stand has deep roots in the culture of the ancient Orient, where it can be found in different regions and periods. Since the shape and stability of the stand are functional features, it is not surprising that this pattern was accepted by the Achaemenids. The primary intermediary function, according to Goldman[22], must be attributed to the Assyrians, and this hypothesis is very likely in view of the importance of Assyrian culture in the creation of Achaemenid court art. However, as for so many other patterns, in this case too a new original version has been achieved, with the unmistakable ribbed treatment of the stand. The term 'Persepolitan' for this version of the incense-burner created many centuries earlier is therefore justified by the representations, which agree in showing that it expressly deserved the court of the Great King. It was probably among the court products that, within the imperial koiné, provincial ateliers like those of Asia Minor searched for inspiration.

The Ashurbanipal examples might lead us to think that the pattern on high stand was a characteristic Assyrian creation. And obviously it is, for it appears to have been of general use at the Assyrian court. However, two objects of large size, part of the Lachish booty represented in room xxxvi of the SW palace in Nineveh (Fig. 14)[23], prove that this type must be understood within a wider context, not only from the geographical point of view, but also from the functional one. The two Lachish objects, which differ only in minor structural, more or less rich details, are wholly correspondent to that of Ashurbanipal's libation, but with a single significant difference, that they have no lid.

The absence of this strictly functional feature may call into question the interpretation of the Lachish objects as incense-burners. On the formal level, they also show notable similarities to other objects of various use portrayed in the Assyrian reliefs. Sennacherib's Babylonian booty, for example, includes a large basin on a flaring stand (Fig. 16) and a second very similar but smaller one (Fig. 15), placed on a table near a hemispherical cauldron[24]. These vessels have in common with our incense-burners the

22) Goldman 1991: 186–188, pl.xix. Ghirshman 1976: 126–127 already connected the origins of the pyraeum with flaring stand with Assyrian and Neo-Babylonian prototypes.

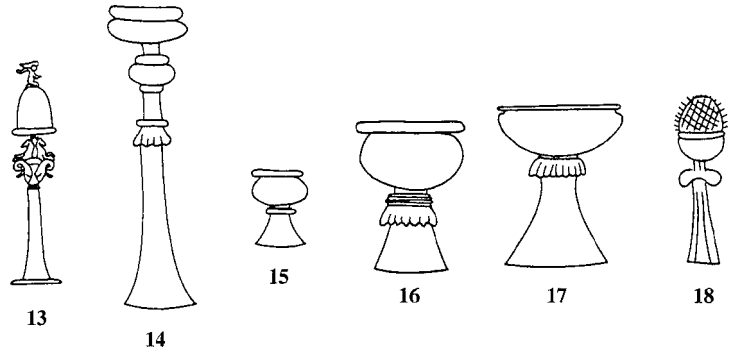
23) Barnett, Lorenzini 1975: pl.82.

24) Barnett, Lorenzini 1975: pl.68.

fundamental features of their structure, the trumpet stand and floral tuft joint, but have wide, stumpy proportions and a very capacious receptacle. From the context of the representation, that of spoils, we cannot derive any direct information as to the function of these objects, which are represented out of service. However, the use of a similar object in a court scene of the time of Sargon is absolutely clear, and it is not that of burning aromas. Here, an attendant draws with a rhyton from a large cauldron on a high stand placed on the floor (Fig. 17)[25], which is very similar in its shape and proportions to those discussed, differing only in its larger size.

The slender proportions and the limited capacity of the bowl, therefore, suggest that the objects of the Lachish booty are incense-burners without lids, or pyraeums, as the variants without lid will be called here , whereas the stumpy, capacious variants are likely to be basins for liquids. A number of seals on the other side illustrate the function of pyraeums in religious contexts of objects of similar structure: stand, joint, bowl. They are of large size and stand on the floor; in the bowl burns a flame which, where the workmanship is clear and reasonably detailed, is conventionally rendered as a round hatched dome with a radiating crown of little strokes (Fig. 18)[26]. The evidence of the glyptics, where pyraeums appear in devotional scenes, is reinforced by the relief: in the White Obelisk, the king sacrifices with a bowl in his hands in front of an offering table, a large cauldron on a low stand and a high pyraeum of our type with a flaming bowl[27].

Thus, it is clear that three basic variants of the same model were in production in Assyrian handicrafts, with the aim of obtaining through the necessary modifications, incense-burners - with the addition of a lid -, pyraeums - without a lid -, and containers for liquids or other substances - with different proportions of the bowl -; all these variants were probably made of metal, either in one piece or in separate parts (especially the stand and bowl). This illustrates the relativity of the relation between function and shape in the productive system of the ancient Near East. Objects of similar style but different function may have been devoted to the same employment milieu or to the same sphere of customers, almost as pieces of a single service, especially in the case of metal objects, this material being perfectly suited to the profile of the objects represented.



Figs. 13–18 Censers; not to scale.

3. Ancient Near-eastern pyraeums and offering-stands without lid

The variant without lid, which will be called a pyraeum on the basis of the evidence of the representations, must be distinguished from the incense-burner with lid in its mode of use. This last operates through slow fumigation on burning coals or stones, as in the Pazyryk braziers[28], while the pyraeum operates

25) See Flandin's drawing in Albenda 1986: pl.123, where the basin differs from the Babylonian ones only in the small rim.

26) So, for example, in the Neo-Assyrian cylinder from Assur in Berlin, Moortgat 1940: pl.78:655.

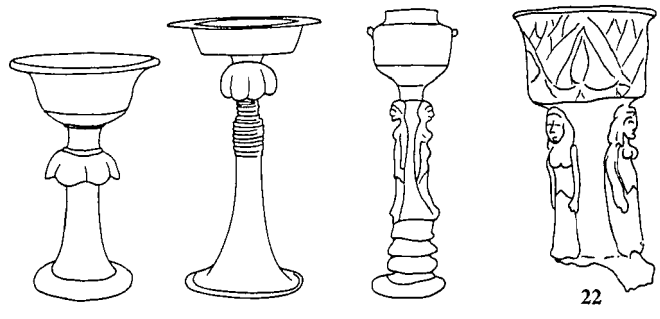
27) Hrouda 1965: 71, pls.10:1, 48:3; Sollberger 1974: pl.xlii: third band.

28) Rudenko 1970: 78–79, 316, fig.28, pls.35, 42B, 62; Invernizzi 1996.

through combustion developing flames. The aims may have been the same, at least in part, for in the pyraeum the aromatic substances may also have burnt slowly on charcoals and in the incense-burner a flame may have developed. However, the employment sphere of the pyraeum was probably wider in the religious field. Artistic representations show various sacrifices where the pyraeum specifically takes the function of an altar, and where the bowl on a high stand is not always a brazier.

A number of bowls on high stands are generically called censers. Before Alexander, artifacts of this shape are rather common: made especially of pottery, they are particularly numerous in Palestine between the end of the 2nd and the middle of the 1st millennium B.C. We may cite, among the most typical examples, a bowl on a high trumpet stand of the end of the 11th century B.C. from Tell eṣ Ṣafi (Fig. 19)[29], and the cult-stand of the 11th - 10th centuries B.C. from Ashdod with a bowl on a fenestrated stand decorated with hand-modelled figurines of musicians (Fig. 25)[30]. In the first case, the stand significantly has the same feature, in the shape of a pendent tuft, as that on the Assyrian and Achaemenian incense-burners. Bowl and support may also have been modelled separately[31], and the same model was produced in metal, as is shown by an example of the 7th century B.C., probably of Palestinian provenance, preserved in Baltimore (Fig. 20)[32], in which the high trumpet stand ends in a double ringed band and a pendent tuft, while the wide bowl has a straight profile and a wide rim.

The common interpretation is that these were censers, and they may be more precisely called pyraeums without lids, though the original artifacts very rarely preserve, and the publications very rarely mention, traces of fire which could establish for certain the use as censer, perfume-burner, brazier or pyraeum of an individual bowl on a high stand. The lack of direct proof of such use must also be set against cases similar to the Assyrian ones discussed above testifying to various versions of a pattern, produced to meet different requirements. Two objects of painted ceramic of the 8th-7th centuries B.C. from the royal necropolis of Salamis in Cyprus[33], for example, have both caryatids leaning against a cylindrical stand, which in one case is slender and on a richly moulded base (Fig. 21), while in the other



Figs. 19–22 Censers; not to scale.

29) Katz, Kahane, Broshi 1968: 74, fig.58 (Tell Zafit); Niemeyer 1970: pl.23a; Stern 1980, 96, fig.7:2. See also the Jericho stands Bossert 1951, pl.1142. The structure is often extremely simple, as in two examples from the Late Bronze age temple of Kamid el-Loz, *Frühe Phöniker im Lebanon* 1983: 71, a bowl on a flaring stand, wide or slender; or in the example from Pyre A of the Salamis necropolis (7th-6th centuries B.C.), Karageorghis 1969: pl.61 (h. 25.5 cm), a bowl on cylindrical stand rather crudely made; or in that from Carthage of the 4th century B.C., only 3.5 cm high, with a flaring stand and wide base, *Fenici* 1988: 645 no.365.

30) *Treasures of the Holy Land* 1986: 159–161, no.78.

31) See the high and wide cylindrical fenestrated stand of the 10th-9th centuries B.C. from Tell Amal, Katz, Kahane, Broshi 1968: 74, fig.58, on to which a bowl has been placed. In this case, however, its three small feet clearly show that this was not the normal position of the bowl, for the small feet were intended to guarantee it a stable base on the ground or a table in its common use. This fenestrated stand can be compared to another hollow, square one, also fenestrated and covered by a complex plastic decoration, *Treasures of the Holy Land* 1986: 161–162, no.79.

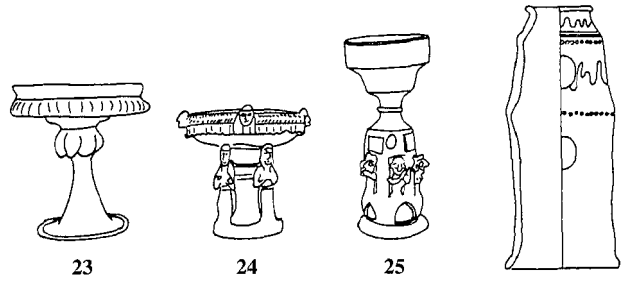
32) Niemeyer 1970: pl.22: Stern 1980: 98, fig.7:1.

33) Karageorghis 1969: pls.ix-x, from graves 47 e 23. Their height is 36 and 23 cm.

it is wider (Fig. 22). The receptacle placed on this elaborate support - in one case a wide basin with a narrow mouth, in the other a deep bowl with a straight profile - suggests a function different from that of burning aromas. Burning is certainly more suited to the wide, shallow bowls, which, depending on their proportions and capacity, may have served generically as containers and, when needed, as braziers for aromatic substances.

Stern has defined as Phoenician this stand crowned by a pendent floral tuft, reviving a hypothesis advanced by Albright[34]. Though its diffusion in the Punic colonies[35] connects the samples of the western Mediterranean with a Phoenician origin, the pendent tuft is also part of the common repertoire of Syrian handicraft, as well as Phoenician (especially in ivory furniture). Moreover, the general shape, without the floral tuft, is much older in the Near East, where it is produced in different media, including stone. In the case of exceptional objects, such as a stone bowl of Gudea[36], a similar use is suggested. But in the 3rd millennium B.C. the same shape dominates in pottery, with the typical stemmed dishes or fruit stands, the wide bowls or dishes on high flaring stands decorated with applied patterns so common in the Early Dynastic funerary furnishings[37]. The same shape in pottery is still widespread even later, from Syria to Iran[38]. However, in these cases, which are more common and of less precious material, no use as censer has been proposed.

Therefore, the fact that this shape is so common and widespread raises the possibility of its relative indefiniteness of function and leads one to wonder if the use of these artifacts as incense-burners may have not been exclusive, since the term is rarely supported by documentary evidence in the form of traces of fire. If the formal designation of bowl on high stand is too generic, the common functional one of incense-burner might also be more cautiously replaced with that of offering-bowl, for the very aroma to be burnt can be included among the offerings, a practice which the classical sources show was very frequent in the Orient, confirming at the same time that it may have required the use of a bowl. On the one hand, Ctesias (I.9.8) mentions two large perfume-bowls of a weight of 300 talents each, on the altar of Zeus Belus in Babylon; on the other, a pyraeum with deep-footed cup very similar to the Asiatic examples burns, in the Graeco-Roman Mediterranean, among the furnishings of scenes in which centaurs and little amorini are active[39].



Figs. 23–26 Censers; not to scale.

34) Stern 1980: 96–98; Albright 1942.

35) Blazquez 1975. See for example the wide bronze bossed bowl of the beginning of the 8th century B.C., with flaring stem and pendent tuft from Cerro del Peñón (Malaga), Niemeyer, Schubart 1965; Niemeyer 1970: pl.21; Stern 1980: 98, fig.8; Gehrig, Niemeyer 1990: 214, no.196 (our Fig. 23). It can be compared to the wide ceramic bowl of the 7th century B.C., perhaps from Rhodes, decorated with masks, and with a stand surrounded by four caryatids, Gehrig, Niemeyer 1990: 191, no.148 (our Fig. 24). Apart from the specific decoration, the shape of these bowls finds a close parallel at the geographical and chronological antipodes, in Bronze age Bactria: Sarianidi 1977: fig.70 (metal bowl with straight profile on high cylindrical stem and flaring base).

36) André Salvini 1992.

37) Moon 1988.

38) Thureau-Dangin, Dunand 1936: 100, fig.29, pl.xxiii; Vanden Berghe 1959: pls.11:d (Tepe Hisar), 50 (Tall-i Djari A, Tall-i Bakun culture), 145:e,f (Hasanlu). Cf. the stone footed plates from the Treasury at Persepolis, Schmidt 1957: pls.57-58.

39) Masson, Pugačenkova 1982, 39, fig.7 (Reinach 1909, 73).

The variant of the fenestrated stand attested to by the Ashdod censer quoted above (Fig. 25) is a minor version of the large stands which were placed on the floor to support offerings in the temples. However, even in the case of the tell al-Rimah stands (Fig. 26)[40], which are particularly significant for the clarity of their finding-context in the cella of the Neo-Assyrian temple, there are no hints as to whether the ritual object they were intended to support was a bowl, a basin or some other item[41]. A bowl for burning incense is a reasonable possibility, considering the discoloration by fire in a bowl of the 12th century B.C. from Megiddo, which was fixed to the support with a pin[42]. However, the fact that the tell al-Rimah stands were found grouped together points once more towards the relative indefiniteness of function of the shape in itself, and in particular towards the possibility that, even in the case of a bowl being supported by each stand, this may have served different functions or actions in each particular case[43].

4. Pyraeums and offering-stands of Hellenized Asia

On the basis of the evidence, the censer on high flaring stand, complete with all its distinctive features, and especially that of the lid, does not seem to survive for long after the Achaemenian empire. We find a last adaptation of it in Egypt towards the end of the 4th century B.C., portrayed in the reliefs of the Petosiris grave (Fig. 13)[44]. The slender trumpet-stem has not changed, but the tuft is here replaced by an elaborate capital in the shape of an open lotus-blossom supporting four protomas of horses, while the high round lid on the plate is finished with a finial in the form of a kneeling winged figure. Despite the absence of original documents or representations - these only concern sacred ceremonies -, the possibility remains open that the use of the incense-burner with lid may have continued at court or in private milieus. In any case, the history of the stemmed model by no means ends with the Achaemenids. Quite the contrary, it is especially in Hellenized Asia that it attained great success, though in the variant of the pyraeum without lid.

In fact, items which are not included within the type with flaring stand are not as common[45]; and the representations offer a very ample illustration of the model with flaring stem in different proportions, from variants in which the stand is particularly developed to variants of symmetrical, almost biconical shape. The use context is here limited to the religious milieu, where variants with small bowls or deep cups are especially employed in the ceremonies, whereas the original objects show that variants with wide bowls also keep alive this characteristic multifunctional shape of the ancient Orient.

In this period too, the bowls on high flaring stands are normally called censers or incense-burners, despite the absence of traces of fire. Metal bowls of small size on high foot were found in Greek, Saka and Parthian levels of Taxila-Sirkap (Figs. 27–30). The receptacle has different shapes: cylindrical, hemispherical, or that of a round basin; the stand varies from the cylindrical stem on flat base or foot, to the wide cylinder, to the cone[46]. Although these features are not specifically functional to the use proposed, it is nonetheless legitimate to put forward this possibility, for similar features, individually or

40) Oates 1974: pls.xxviii:1, xix:3 (offering stands). They continue an ancient Mesopotamian tradition of the 2nd and 3rd millennia.

41) Oates 1974: 180 reports that traces indicating the existence of a brazier or altar, though not of the shape in question, were clear on the surface of a brick sunken into the floor of the antecella.

42) Pritchard 1954: 319, fig.583; Oates 1974: 181. For other stands of the 12th-11th centuries B.C., see Pritchard 1954: 319–329, figs. 582, 584–585.

43) At Tarquinia, for example, a holmos is placed on a large perforated pottery stand of the end of the 8th - beginning of the 7th centuries B.C., Gehrig, Niemeyer 1990: 182, no.129.

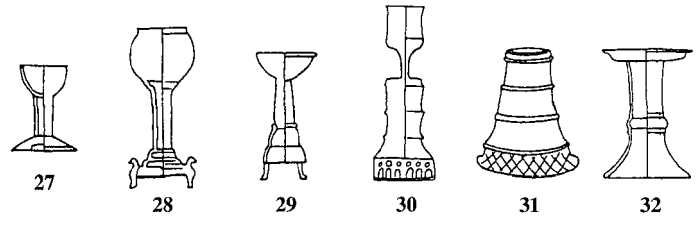
44) Lefebvre 1924: pls.8–9; Goldman 1991: pl.xviii:G. The objects painted in a tomb of the Seleucid period at Marisa have been interpreted as candelabra by Peters and Thiersch 1905, as cressets by Albright 1942, who compares their structure to that of the Phoenician censers. The finial of the richly elaborated stem might perhaps be an incense-bowl with lid.

45) For example, an iron object of the 2nd-3rd centuries A.D. from Garni in Armenia with little conical bowl on simple tripod and high, slender faceted stem is called a candlestick, and its general type is undoubtedly that of the Roman candlesticks. See Arakeljan 1976: 86, pl.cv:2.

46) Marshall 1951, 596, n.324–327, pl.176; Dar 1984, pl.xviii:a.

in association, characterize on the formal level the whole group of incense-burners and pyraeums on high stands.

In this period too, a ceremonial use has been sometimes proposed for similar furnishings, particularly in the Near East. The nature of this use is shown more explicitly by the term 'altar', which designates three bronze examples of the 1st-2nd centuries A.D. from the wādī Ḍura', in South Arabia. They have a wide bowl on a high cylindrical stand with torus moulding, below which the base flares in a trumpet shape (Fig. 32)[47]. The term is certainly appropriate for the censers depicted in religious scenes, such as the pyraeum with wide conical stand, wide squared bowl with a toothed or festooned rim and a little joint of similar shape and decoration, incised between two eagles on a small silver plaque of the middle or the second half of the 3rd century B.C., of Iranian provenance (Fig. 67)[48]. It is also appropriate where there is an influence of architectural forms, as in the stone trumpet stand of Nabataean milieu[49] without base crowned by a Ionic capital. The finding of the South-Arabian examples in graves, however, should caution us against abusing sacral terms, for these models may certainly have originally served either as small altars, in a sacred as well as in a domestic context, or for secular purposes, the choice ultimately lying with the utilizers.



Figs. 27–32 Censers; not to scale.

The majority of the original artifacts known today are apparently concentrated in the eastern regions of Hellenized Asia, and are made of pottery. At Taxila[50] they have a high foot or support (Figs. 33–34), and relate to incense more than to other offerings, but the function of censer is acknowledged even in the case of a bowl of Parthian age, which has no stand, though it does have a loop handle connecting rim and base[51]. In Central Asia, this model seems to have been particularly popular, from the Parthian period to the Islamic conquest, perhaps because of the predilection that local pottery showed from the Bronze age onwards for the footed bowl or goblet, which sometimes developed in a rather high stand[52].

The range of variation of these objects commonly described as censers is considerable. One from Erkurgan, in Sogdiana (3rd-4th centuries A.D.), is richly ornate in the incision and application techniques. It has a very deep bowl and trumpet stand with the characteristic decorated joint and a very protruding disc crowning it in an original way, which evokes the idea of a table (Fig. 35)[53]. A deep bowl, though smaller, and conical fenestrated stand of old ancient-oriental type is shown by a censer of the 6th century A.D. from Balalyk-tepe in Bactria (Fig. 36)[54]. The height of these objects, which are

47) Breton, Bafāqīh 1993: nos. 39–41, pls.28:84–85. S.Tassinari, in Breton, Bāfaqīh 1993: 50, compares them to an example from Pompei, though without suggesting a provenance from Campania.

48) Dupont-Sommer 1964: 119–132; Gnoli 1995. From the centre of the bowl a dome with high incisions protrudes: a conventional though realistic representation of the fire, different from the rayed dome of Assyrian tradition.

49) Glueck 1965: 229, pl.191.

50) Marshall 1951: 421, nos.130–132, pl.125.

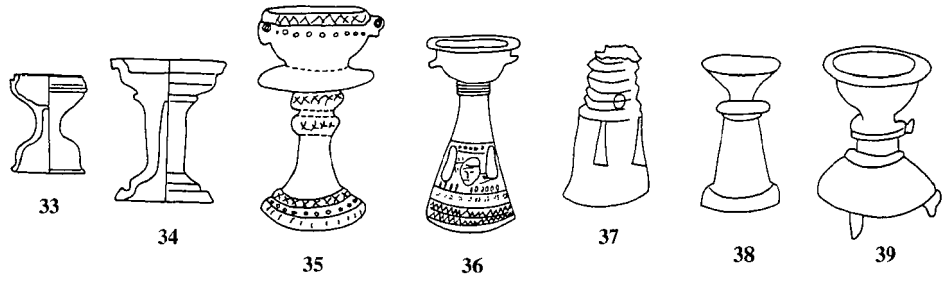
51) The hypothesis that the bowls, 421, nos.133–134, pl.125, were drinking cups is rejected in favour of that of censers.

52) Compare for example the bowls on high flaring stands, Sarianidi 1977: 97–110, fig.25, with the common footed goblets, figs.23–25.

53) *Culture of ancient Uzbekistan* 1991, vol.1: 182, no.287 (h. 30 cm).

54) *Culture of ancient Uzbekistan*, 1991, vol.2: 11, no.361 (h. 33.5 cm). An older fenestrated stand (2nd-3rd centuries A.D.) was found, without the bowl, at Dalverzin-tepe in Bactria: *Antiquities of southern Uzbekistan* 1991: 263, no.58 (present h. 17.5 cm) (our Fig.37).

among the highest in the region, reaches about 30 cm, and marks them out as portable furnishings. Others are even smaller, such as those from the Sogdian necropolis of Orlat (2nd-3rd centuries A.D.) (Fig. 38)[55], from Kampyr-tepe (1st-2nd centuries A.D.) (Fig. 39)[56], and from Kul-tepe (2nd-3rd centuries A.D.)[57]. Kampyr-tepe has produced a considerable series of footed bowls of small size, sometimes almost in miniature, interpreted as censers. The bowl is deep, hemispherical or conical; the stand has a more or less elaborate structure and may be reduced to a wide flaring foot or two discs, possibly on small feet (Figs. 40–42)[58].



Figs. 33–39 Censers; not to scale.

Many Central Asian artifacts are actually fabricated in separate parts which were mounted together before baking, and it is likely that objects made up of separate parts existed in materials other than pottery. The production process in separate parts partly explains the frequency of joints and double discs separated by grooves, with profiles which preserve acute shapes that suggest the influence of metal prototypes. Probably metal pyraeums are also portrayed in Gandhāran art: a low pyraeum with a small bowl on a series of wide discs deeply separated on a square base with small feet burns in a lamentation scene around the coffin of the Buddha[59].

It must, however, be repeated that, in general, the use of the individual actual objects as pyraeums is rarely proven, and that, on the contrary, even where there are traces of fire this interpretation, which is common today, must be balanced against that preferred at the beginning of the great Soviet archaeological expeditions in Central Asia, when very similar objects, though possibly of less careful workmanship, were defined sometimes as candlesticks, sometimes as censers. A 'candlestick' from Pendjikent[60] has a cylindrical stand on a hemispherical base and a bowl with a straight profile (Fig. 43); one from Altyn-asar in Chorasmia (Fig. 44)[61] has a high cylindrical stand on a disc-base and a hemispherical bowl decorated by four bosses on its rim. In other cases the cylindrical stand is marked by simple decorations, ribbing or more or less protruding rings[62], while even conical fenestrated stands are still in production, following very old Oriental models[63].

55) *Antiquities of southern Uzbekistan* 1991: 307, no.246 (h. 19 cm), with wide bowl connected to the conical stand by a very projecting disc.

56) *Antiquities of southern Uzbekistan* 1991: 284, no.151 (h.15 cm). The stand with three small feet and the bowl on a foot are balanced in a biconical pattern with a concave joint at the centre. Cf. the fragmentary example of the same site and age, *ibidem*: 288, no.169 (h. 11.6 cm). The biconical proportions are reminiscent of those of the small altar or pyraeum placed on the high stepped altar on which the Cybele priest depicted on the silver plate from Ai Khanum sacrifices, Francfort 1984: pl.xli. A libation of liquid seems by contrast to be performed on the small biconical altar of similar shape of a relief from Bard-e Neshandeh, Ghirshman 1976: 22, fig.11, tav.xiii.

57) *Antiquities of southern Uzbekistan* 1991: 304, no.236 (h. 19.2 cm). The bowl is wide and deep, the conical stand on high smooth ring is opened by wide windows.

58) *Antiquities of southern Uzbekistan* 1991: 286–287, nos.160, 162, 163 (h. 13.8, 7.9 e 8 cm respectively).

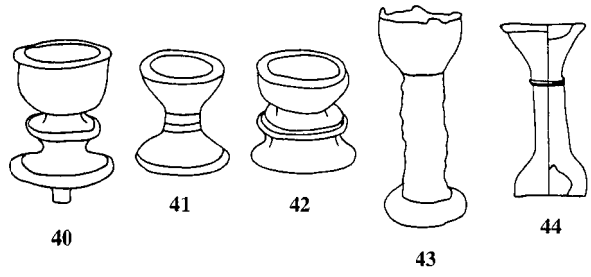
59) Lyons, Ingholt 1957: fig.144.

60) Bentovič 1957: 142, fig.10.

61) Tolstov 1952: 22, fig.11: v. Similar patterns are known in Bronze-age Bactria: Sarianidi 1977; fig.23.

62) Bol'šakov 1964: 105, fig.10; Staviskij 1964: 170, fig.30; Raspopova 1960: 154, fig.5:3, 20.

63) Bentovič 1964:288, fig.28:5–6.



Figs. 40–44 Censers; not to scale.

5. Pyraeums and offering-stands of Hellenized Asia (representations)

While the original artifacts are usually made of pottery, the representations of pyraeums suggest the common use of more valuable materials, such as metal, for the objects usually employed in religious ceremonies. These objects are among the finest handicraft products of Hellenized Asia and in the individual examples variously produce a blend of western and eastern traditions. Among the scenes portrayed in art, the sacrifice performed by Conon painted on the walls of the temple of Bel at Dura Europos in the last quarter of the 2nd century A.D.[64] is particularly informative. Two priests in simple white tunics accomplish a similar rite: the one on the right holds in his left hand a bowl painted red inside and two knives, and throws a substance that we may imagine to be incense into the flames of a pyraeum with his right hand. The priest on the left holds a small jug in addition to the bowl and knives, while his right hand assumes the same attitude as that of his colleague.

The two pyraeums have the same deep narrow cup, whereas the details of the structure of the high stand differ: in one case this is a high, narrow cylinder on a flaring base, encircled by a number of rings (Fig. 46); in the one on the left (Fig. 45) we again find the typical high conical base of the Achaemenid incense-burner, though this is now fluted vertically instead of horizontally, and flares at the bottom in a smooth band on small feet. A smooth round element between two ribbed ones connects stand and bowl. As in the Achaemenid pyraeum, the principle of the symmetry of the upper and lower parts of the stand is basically respected. Cumont interpreted the painting as representing blue-green glazed pottery pyraeums; indeed, the excavations carried out later at Dura by Yale University brought to light a number of small pyraeums of this material so characteristic of the Parthian age[65]. However, the deeply articulated shapes, the sharp profiles, and the small feet of the left Conon pyraeum are particularly consonant with a metal object[66], the more so because the models of the pottery pyraeums themselves are sometimes to be sought elsewhere, in toreutics and even in stone sculpture.

The pyraeum drawn on a pottery fragment of the 2nd century A.D. from Assur (Fig. 47)[67], from which two lines of smoke or flames rise, is also probably intended to be of metal. It has in common with that of Conon the slim feet (only two are represented) supporting the smooth band of the wide base (here with a straight profile), and the conical shape of the stand, crowned by a smooth joint which, together with a low cylinder, supports a small bowl with a wide flaring rim. The horizontal treatment of the surfaces and the simple joint to the bowl of the Assur pyraeum clearly connect it with Achaemenian prototypes. A tall copper flaring stand from Taxila (Fig. 31)[68] with its surface divided into bands by ribs gives us a clearer idea of the appearance of the Assur censer. However, the memory of the typical

64) Breasted 1924: 80–81, pls.ix, xi; Cumont 1926: 46–48, pls.xxxii, xxxv; Ghirshman 1962: 46, fig.59; Perkins 1973: 36–41, pl.10.

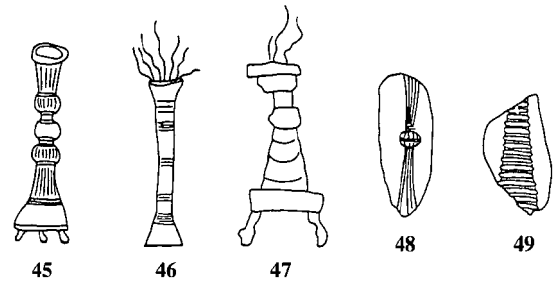
65) Rostovtzeff 1938: 46, pl.viii:1. Cf. Invernizzi forthcoming.

66) Perkins 1973: 40, suggests silver for both pyraeums, which have the same cold bright blue colour connected by Cumont with glaze.

67) Ghirshman 1962: 47, fig. 60.

68) Marshall 1951: 596, no.327a, pl.184. A conical stand of thin bronze sheet decorated by horizontal incisions was found also at Masjidi Sulaiman; its base is closed by a concave applied sheet (Ghirshman 1976: pl.60:GMIS 291). Its small height (9.4 cm) makes it possible that it was simply a small model. In any case its employment possibilities are various.

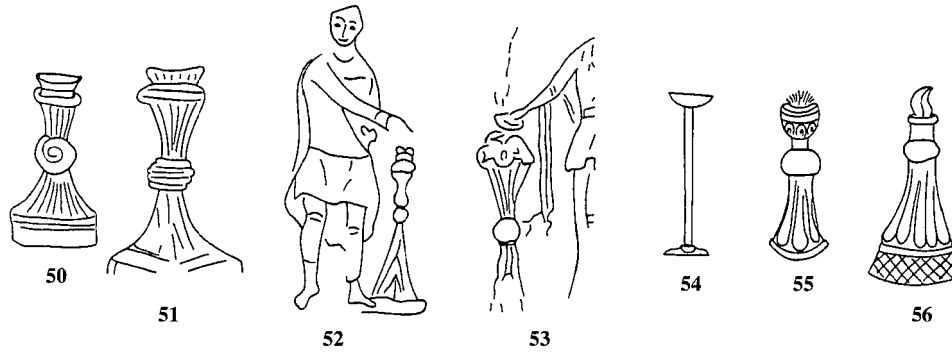
Achaemenian treatment, so different from the vertical modelling popular in Hellenized Asia, is particularly clear in a fragment of mural painting from the naos of the temple of Zeus Theos at Dura, which preserves part of the ribbed flaring stand of a metal pyraeum (Fig. 49)[69].



Figs. 45–49 Censers; not to scale.

The two articles of the Conon sacrifice, according to the original interpretation, serve different purposes. While the flames of the pyraeum to the right are represented in black, a branch is represented to the left in the copy of the painting, and Cumont thought it to be a reed to be used as a sprinkler for lustrations[70]. This interpretation was abandoned later[71], for the whole Durene painting testifies to both variants of pyraeum being used for the same purpose. The richer version, with a conical stand, is portrayed again in the same temple in the Lysias sacrifice[72], and, with only one joint instead of three, in the Otes sacrifice (Fig. 50)[73] and in that performed by the tribune Terentius (Fig. 51)[74]; the simpler model, with a cylindrical stem, in panel II of the same hall frescoed by Conon[75]. But this same action is very common elsewhere in Durene temples (Figs. 52–53)[76].

In face of such unanimous evidence, the rite of immersion of a branch in liquid would appear to be completely isolated. Also, the reconstruction of an analogous context for panel II lacks support because



Figs. 50–56 Censers; not to scale.

69) Brown 1939: 208, pl.xxiv:5. The fragment pl.xxiv:4 (our Fig. 48), by contrast, has a slim biconical stem with round joint at the centre.

70) Cumont 1926: 67. Cf. Breasted 1924: 80–81.

71) Perkins 1973: 40.

72) Cumont 1926: 76–84, pls.xliv-xlv; Perkins 1973, 41, pl.11: four officiants on pyraeums on the southern wall of the pronaos.

73) Cumont 1926: 122–134, pls.lv-lvi; Perkins 1973: 46, pl.13.

74) Breasted 1924: 96, pl.xxi; Cumont 1926: 89-101 (gold), pls.l-li; Perkins 1973: 43, pl.12.

75) Cumont 1926: 72–73, pls.xxxi, xli:2, xlii:1; Perkins 1973: pl.10.

76) Perkins 1973, 49, pl.14 (paintings of the naos of the Zeus Theos temple). See also the graffito with a sacrifice to Iarhibol in the Azzanathkona temple, Hopkins 1934b: 152–156, pl.xxxvi:1–3 (our Fig. 52); and the red ink drawing from the Azzanathkona temple showing a Tyche pouring incense (?) from a patera on the flame of a biconical pyraeum, Brown, Rostovtzeff, Welles 1936: 484–485, fig.32 (our Fig. 53). In another graffito a bowl on a very high stem with round base is interpreted as a goblet by Hopkins 1936: 124–125, fig.5 (our Fig. 54). However, its scale in respect to the figure which stands in front of it rather suggests a censer.

of the complete absence of traces of a branch[77]. By contrast, it is significant that the rite is the same in a Roman military ceremony and in a local Semitic cult. The attitude of the hand, which is shown in back view, itself suggests an offering in the fire, and we may suppose that what is represented as a branch in the copy of the painting depicted flames in the original; or that a branch is being thrown into the flames (not represented or not preserved) instead of incense grains or powder. The evidence of the painting, on the other hand, is confirmed by sculpture, where we usually find the flames represented in relief. It is interesting to note here that the pyraeums of the Aphlad (Fig. 55)[78] and Nemesis (Fig. 56)[79] reliefs, both with small bowls on flaring supports and round joints, have surfaces carved by vertical grooves opening at the bottom in round petals, a typical mark of a metal furnishing. However, while in the Nemesis pyraeums the flames are realistically modelled in a twisted bundle, that of Aphlad continues the Assyrian representational convention: a dome in relief surrounded by a crown of short strokes incised on the background.

On the deep conical cup of the Terentius and Otes pyraeums, a straight flaring rim is so distinctly represented that, instead of the simple rim of the bowl, it might represent a shallow plate for the fire placed or fixed on the cup ending of the biconical stand. Older originals, such as that from Tell eṣ Ṣafi discussed above, lend some support to this hypothesis, which is even more likely for the large pyraeum of one of the reliefs of the Bel temple at Palmyra (Fig. 57)[80], where an elaborate stand has a conical cup ending, less deep than at Dura, on which a deep bowl with straight and smooth walls is placed.

The Dura documents find excellent and frequent parallels at Palmyra, where the officiants sacrifice in analogous scenes on very similar pyraeums from which plastically represented flames rise (Figs. 58–64). The representational contexts vary: sometimes the sacrificant with his pyraeum is at the centre[81]; sometimes the pyraeum alone is represented, in front or between the gods, with no dedicant[82]; sometimes the sacrificants form a pair[83]. The braziers are shallow plates[84] or deep bowls[85]; the joints may be absent[86] or bear a decoration[87], take the shape of a disc[88] or be multiple mouldings[89]; the stands are grooved in the shape of a petal crown, possibly on a small smooth band[90] or be conical stems[91]; to these small feet[92] or more or less elaborate square bases on small feet[93] can be added. These are all variations on the same metal pyraeum pattern, which is also attested at Hatra, where the sacrifice to the standard on

77) According to Breasted 1924: 90 and Cumont 1926: 73, the branch is simply no longer traceable.

78) Perkins 1973: 77–79, pl.31; Downey 1977: 7–9, no.1; Colledge 1977: pl.33.

79) Perkins 1973: 89–90, pl.36; Downey 1977: 29–31, no.9.

80) Tanabe 1986: pl.45.

81) Sacrifice to the rider gods Abgal and Ashar (154 A.D.), Ghirshman 1962: fig.86; Colledge 1976: pl.43; Tanabe 1986: pl.136 (our Fig. 63).

82) Tanabe 1986: pl.137 (rider god from Khirbet Ramadan; our Fig. 62); Colledge 1976: 45, fig.26 (goddess and rider god from Djub el-Jarrah).

83) Tanabe 1986: pl.53 (relief from the temple of Bel; our Fig. 58).

84) Colledge 1976: pls.39 (relief of the 3rd century from the Palmyrene with Allat and the Sun), 41 (relief of 225 A.D. from Wadi el-Miyah with five gods), 42 (relief with dedication to the god Malka, 263 A.D.), 43, 44 (relief of the guardian spirits of Bet-Phasi'el, 191 d.C.), fig.26; Tanabe 1986: pls.58 (dedication to the god Abgal, 199d.C.; our Fig. 64), 103 (offering to five gods from Qum es-Salabikh, 225 A.D.; our Fig. 59), 116 (relief with dedication to the god Malka, 263 A.D.), 128 (sacrifice to Allat from Khirbet el-Sane; our Fig. 61), 134 (relief with Hercules-Nergal from the Tetrapylon surroundings; our Fig. 60), 136 (our Fig. 63), 137 (our Fig. 62).

85) Tanabe 1986, pl.45 (relief of the Bel temple); 107 (sacrifice to five gods from al-Maqate, with very large bowl).

86) Colledge 1976: pls. 39, 42, 43; Tanabe 1986: pls.58 (our Fig. 64), 116, 136 (our Fig. 63).

87) Tanabe 1986: pls.53 (our Fig. 58), 134 (our Fig. 60).

88) Tanabe 1986: pls.107, 128 (our Fig. 61), 137 (our Fig. 62).

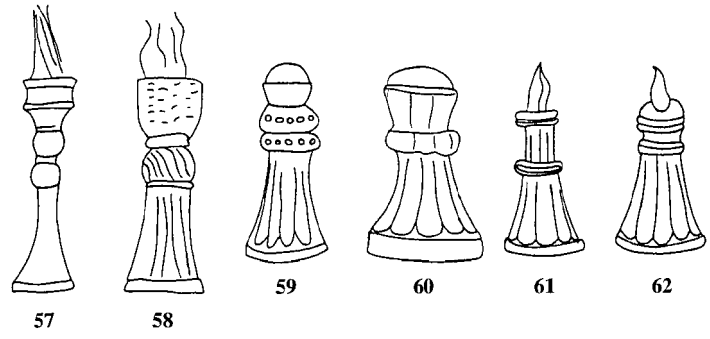
89) Colledge 1976: pls.41, 44, fig.26; Tanabe 1986: pls.45, 53 (our Fig. 58), 103 (our Fig. 59).

90) Colledge 1976: pls.39, 41, 43, fig.26; Tanabe 1986: pls.53 (our Fig. 58), 58 (our Fig. 64), 103 (our Fig. 59), 107 (very wide), 128 (our Fig. 61), 134 (our Fig. 60), 136 (our Fig. 63), 137 (our Fig. 62).

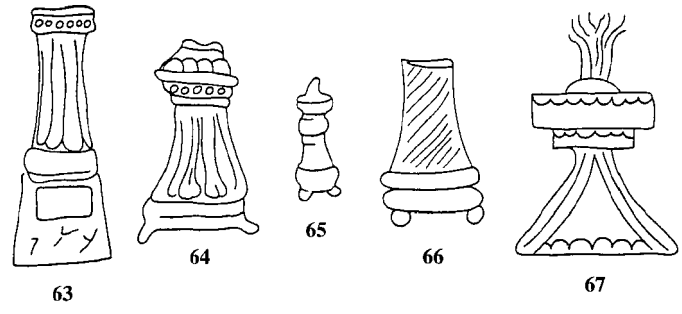
91) Colledge 1976: pl. 42; Tanabe 1986: pl.116.

92) Colledge 1976; fig.26; Tanabe 1986; pl.128 (our Fig. 61).

93) Colledge 1976: pl.43; Tanabe 1986; pls.58 (our Fig. 64), 136 (our Fig. 63).



Figs. 57–62 Censers; not to scale.



Figs. 63–67 Censers; not to scale.

a stele with a frame in the shape of an aedicula[94] shows a rather squat pyraeum (Fig. 65), and a second fragmentary sculpture[95] a stand with twisted flutings (Fig. 66).

Apart from the example portrayed on the silver plate discussed above (Fig. 67), Iranian pyraeums can also be placed alongside the Syro-Mesopotamian ones. In Elymais, at Masjid-i Sulaiman[96], a personage with a horn of plenty stretches out his hand over a stemmed pyraeum built out of a succession of cushion shapes. In a second relief these shapes are placed in more regular symmetry with respect to the centre[97]. The proportions of these pyraeums are rather squat, but their structure can be easily recognized as a variant closer to the type of the Conon sacrifice than to that of the Assur drawing.

Later, in Sasanian Iran, and farther to the east, in the Kushan empire, the frequency of original objects in Central Asia is echoed by the occasional presence on coins of a pyraeum which can be referred to our group. As a rule, the type of the reverse of the Sasanian coins is a fire altar with a column or pillar on a stepped base, supporting a stepped table on which flames burn (Fig. 68). In the late Sasanian coins, however, this pattern is changed into a much more slender biconical construction reminiscent of the metal artifacts of our group, where the two-stepped base and table are connected by domed elements symmetrically opposed to the extremely narrow centre tied by two ribbons (Figs. 69–70)[98]. On the obverse of the Kushan coins, by contrast, the king is usually represented standing in the attitude of performing a sacrifice on an altar of varying shapes. Occasionally, it takes the shape of a biconical

94) Safar, Muhammad Ali Mustafa 1974: 148–149, no.139.

95) Safar, Muhammad Ali Mustafa 1974: 298, no.298.

96) Ghirshman 1976: 124, pl.lxxix:2 and pl.32:35.

97) Ghirshman 1976: pl.lxxix:4 e 33:165. In the text, 126–127, Ghirshman's tendency is to separate this pyraeum from the Syrian ones as a different type.

98) Göbl 1971, tables xi-xiii, from Khosrow I.

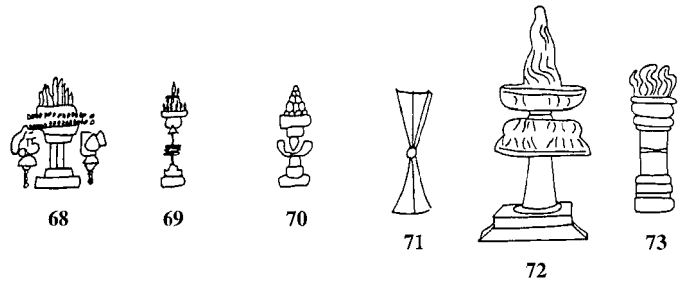
metal pyraeum (Fig. 71)[99] not very different from the examples we have discussed (cf. Figs. 48, 50–51).

A number of early Sasanian issues are also of particular importance because on the upper table of the altar is placed a brazier with animal legs, while two small offering stands are placed on the ground to both sides of it, immediately below the paw legs[100]. These stands have the shape of a bowl on a high stand or foot, covered by a dome which represents the lid or the substance overflowing the bowl. In any case, these bowls are not flaming, and therefore prove that this pattern could be used for containing as well as for burning offerings.

In Gandhāran art, this type of pyraeum is often adapted to the local culture by the addition of significant details. The pyraeum represented in a relief from the sacred area of Butkara[101], for example, has a wide shallow bowl from which a high twisted flame rises, and which is supported by a flaring stand on a low, wide stepped base (Fig. 72). However, instead of the small joint in shape of a round joint or torus widespread from the Near East to Central Asia, the stand is crowned just below the brazier by a kind of double umbrella carved with a lotus-flower pattern.

A number of Gandhāran reliefs show at the base of a large image of the Buddha a typical small devotional scene, in which an altar burns between two kneeling worshippers. Sometimes, the structure of this sacred furnishing seems influenced by architectural patterns, as in the case of a relief probably from Jamālgarhī[102], where the stand is a squat column with a double-plinth base and a low capital of the same profile as the bowl, though in reverse (Fig. 73). More often, it is our typical flaring stand, though an architectural influence might be detected here too. Though a classification among the bowls on high flaring stands is also suggested by, among other factors, the wide diffusion of this type throughout Hellenized Asia, a close relation to architectural elements can nevertheless be noted. On the one hand, the structure of the stand can be very similar to that of the columns of the small framing arcades of the reliefs, which are considerably tapered. On the other, the round joints are often replaced by a characteristic large feature of which the profile can be compared to that of a reverse hemispherical bowl or an umbrella. Its function as a high capital is also supported by a similarity with the capitals of these small framing columns[103].

This typical joint in the form of a reverse bowl or umbrella is found again in the scene at the base of the fasting Siddhārta in the Lahore Museum[104], on a slender flaring stand with ringed shaft (Fig. 74). Here



Figs. 68–73 Censers; not to scale.

99) See the table of altars, Göbl 1984: pl.viii:17.

100) Göbl 1971, tables vi-viii (Shapur II-Yazdegerd I). It must be noted that in the rites of the modern zoroastrianism the fire burns in a deep footed goblet of metal placed on a low stone table: see *Zarathustra* 1993, figs. p.72 (vessel of the perpetual fire), and p.24 (vessel of the fire in the haoma ceremony, this fire being also fed with incense, p.79). This shape is apparently not attested in antiquity as a fire altar but is clearly related to the bowls on flaring stands portrayed on these coins beside the proper altar and particularly widespread in the Iranian Central Asian world. It may be thought that the late Sasanian type of fire altar represents an intermediary step towards the adoption in modern times of the footed goblet as a fire altar.

101) Faccenna 1962, pl.cccx.

102) Rosenfield 1967, pl.92.

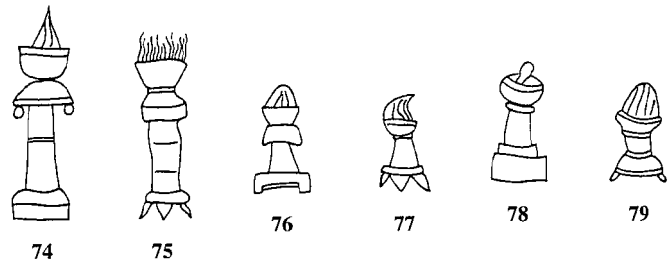
103) Compare, for example, the pyraeum Lyons, Ingholt 1957, fig.153 (our Fig. 76), which Francfort 1984, 83 also considers a pyraeum (of metal) with high flaring stand, with the capitals of the small columns of the relief Lyons, Ingholt, fig.156.

104) Lyons, Ingholt 1957, fig.52.

however, the flaring round, thick base clearly exclude a connection with architectural mouldings. The pyraeum of a scene of the distribution of relics (Fig. 76)[105] has the same typical joint, while the flaring stand is supported by a square base on small feet. When the bowl is directly supported by the stand, without the interposition of the reverse bowl joint, as in the case of a teaching Buddha[106], it is even more clearly defined as a flaring stand (Fig. 77), while its non-architectural toothed base, suggesting a metal artifact, points to a mixture of different influences.

This same toothed base is encountered again in a small Lahore relief[107], where the pyraeum has the same height as the worshippers standing at its sides (Fig. 75). The toothed pattern is reminiscent of the small feet of the metal pyraeums represented in Dura and Palmyra, as well as of the crenellation of a few small bronze bowls from Dura and Hatra[108]. The stand does not flare here but takes the shape of a slender, powerful round pillar and is crowned by a joint which has the same reverse profile as the large deep burning bowl. In the small relief on the base of a Siddhārta in meditation in the Peshawar Museum[109] the pyraeum also has feet, though much smaller ones, as in the metal pyraeums from the western Parthian regions, but the joint on the very short shaft has almost the same reverse profile as the flaming bowl. When the stand has no joint (Fig. 78), as in the case of the flaring stand on the base of a Maitreya in meditation at Lahore[110], the similarity with the western Parthian artifacts is even closer.

Especially characteristic is the variant attested by pre-Islamic Sogdian painting. Of a scene in Varakhsha[111], a figure with rayed head and one of smaller size are preserved, kneeling at each side of a pyraeum which differs from the Durene ones only in the thin square fringed plane interposed between the round joint of the high conical stand and the deep cup from which flames rise (Fig. 80). This fitting might be a service table or a protection against the sparks. The use context shown by mural paintings in Pendjikent confirms that here too, as in the Parthian world, this furnishing is employed in sacred rites. In room 7 of Building III (Fig. 81)[112], a figure kneels on the ground at the side of another figure of gigantic dimensions and in front of a pyraeum lacking its upper end, but clearly corresponding to the Varakhsha one even in its fringed table. In a niche of room 24 of Building VII (Fig. 82)[113], the altar held in the hand of a small figure kneeling at the side of a large god in Indian attitude has, by contrast, a



Figs. 74–79 Censers; not to scale.

105) Lyons, Ingholt 1957, fig.153.

106) Lyons, Ingholt 1957, pl.xxi:4. Cf. also Lyons, Ingholt 1957, fig.232 (our Fig. 79), where a very squat cylindrical shaft connects the base with small feet to the wide bowl which has the same reverse profile of the base.

107) Lyons, Ingholt 1957, fig.478.

108) Hopkins 1934a, 49, pl.xxiii:3; Safar, Muhammad Ali Mustafa 1974, 172, n.164; Invernizzi 1996.

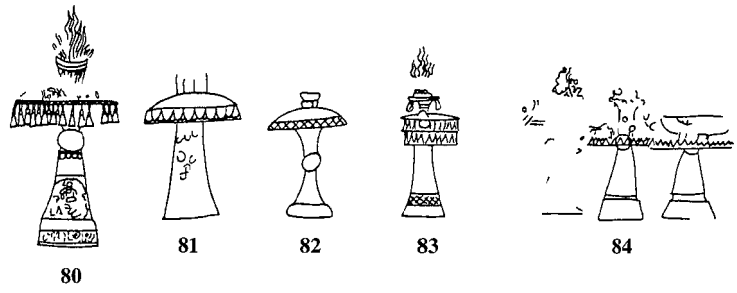
109) Lyons, Ingholt 1957, fig.284.

110) Lyons, Ingholt 1957, fig.261, 302. That this kind of pyraeum is portable is shown by reliefs such as those from Butkara, Faccenna 1962, pls.cliv, clxxi, representing donors carrying a flaming pyraeum in their hands. The object pl.cliv has a moulded base and top, and a plate with a thick bundle of twisted flames, while the hand of the donor conceals completely the shaft of the column or possibly cylindrical stand of the pyraeum.

111) Šiškin, 1963, pl.xiv.

112) *Živopis' Pjandžikenta* 1954: pls.xxvi, xxviii; Belenickij 1973: Fig. p.16 (altar).

113) Belenickij 1973: Fig. p.30.



Figs. 80–84 Censers; not to scale.

convex table.

It seems, moreover, to be particularly significant that in room 10 of Building I (Fig. 83)[114] a similar pyraeum is inserted in the festive context of a banquet in which numerous personages take part, squatting on carpets. Apparently, in late-antique Sogdiana - and probably elsewhere - the employment of this furniture was not limited to the temple, but included the palace, and probably in various ways, for the palace is the setting of a last scene painted in room 6 of Building III (Fig. 84)[115], where three high conical stands with horizontal toothed tables are represented with different upper endings. It is likely that not all of these objects are pyraeums, and this is certain in the case of the better preserved one, which supports not a brazier but a large basin. The possibility of a different function of specimens suitably adapted from formally similar models, as has already been noted in the handicraft of the ancient Near East, can thus be extended to pre-Islamic Central Asia[116].

In conclusion, the pyraeums or offering bowls on high flaring stands which are often called thymiateria according to the Greek style, are widespread all over Hellenized Asia. We may even speak of a koiné for them, since, beyond the specific regional traits, they apparently have a similar structure and use everywhere, and are often portrayed also functioning as altars. They seem to be produced by preference in light materials, such as metal or pottery, so that they can be easily transported, being mostly of small dimensions. From this point of view they are closely related to other furnishings with the same purpose, which are more definitely portable and show a wider range of formal variations[117]. In their use, they are also close to a different class of objects of parallelepiped, pillar or column shape, normally called altars even when flames connote them as pyraeums. These last objects actually find exclusive employment as altars, and in this function they are portrayed in the same contexts as the pyraeums on a high stand. Because of the absence of the lid both are clearly distinct in their use from the incense-burners, which may not be very different, however, in other formal aspects.

References

Albenda, P.
1986 *The palace of Sargon king of Assyria*, Paris.

Albright, W.F.
1942 Two cressets from Marisa and the pillars of Jachin and Boaz, *BASOR*, 85: 18–27.

André Salvini, B.
1992 À propos d'un objet cultuel de l'époque de Gudéa (AO 29931), *SMEA*, XXX: 267–273.

114) *Živopis' Pjandžikenta* 1954: pl.vii.

115) Belenickij 1973: Fig. p.15.

116) Similar evidence is possibly provided also by Palmyra. In an archaic relief, Colledge 1976: 40, fig.20, the offering is performed on a deep bowl on trumpet stand with a large round rocchetto, but no flames. However, in this case one may wonder whether at the early time of this carving the conventional rendering of the fire was already in common use in Palmyrene iconography.

117) Invernizzi 1996 and forthcoming.

Antiquities of southern Uzbekistan
1991 *Antiquities of southern Uzbekistan*, Tokyo.

Arakeljan, B.N.
1976 *Očerki po istorii iskusstva drevnej Armenii (VI v. do n.e. - III v.n.e.)*, Erevan.

Barnett, R.D., Falkner, M.
1962 *The sculptures of Assur-Nasir-apli II (883–859 B.C.), Tiglath-Pileser III (745–727 B.C.), Esarhaddon (681–669 B.C.) from the Central and South-West palaces at Nimrud*, London.

Barnett, R.D., Lorenzini, A.
1975 *Assyrische Skulpturen im British Museum*, Recklinghausen.

Belenickij, A.M.
1973 *Monumental'noe iskusstvo Pjandžikenta*, Moskva.

Bentovič, I.V.
1957 Keramika Pjandžikenta, *Trudy Tadžikskoj arheologičeskoj ekspedicii*, II, MIA 37, Moskva-Leningrad: 133–145.
1964 Keramika verhnego sloja Pjandžikenta (VII-VIII vv.), *Trudy Tadžikskoj arheologičeskoj ekspedicii*, IV, Moskva-Leningrad: 265–298.

Blazquez, J.Ma.
1975 *Tartessos y las origenes de la colonizacion fenicia en Occidente*, Salamanca.

Bol'šakov, O.G.
1964 Otčet o raskopkah severo-vostočnoj časti ob'ekta III (kompleksy I:II, raskopki 1952–1956 gg), *Trudy Tadžikskoj arheologičeskoj ekspedicii*, IV, Moskva-Leningrad: 88–120.

Bossert, H.Th.
1951 *Altsyrien*, Tübingen.

Breasted, J.H.
1924 *Oriental forerunners of Byzantine painting*, OIP I, Chicago.

Breton, J-Fr., 'Abd al-Qādir Bāfaqīh, M.
1993 *Trésors du Wādī Ḍura' (République du Yémen). Fouille franco-yéménite de la nécropole de Hajar am-Dhaybiyya*, BAH CXLI, Paris.

Brown, F.E.
1939 The temple of Zeus Theos, *The Excavations at Dura-Europos, Preliminary report of the seventh and eighth seasons of work, 1932–1934 and 1934–1935*, ed. by M.I.Rostovtzeff, F.E.Brown, C.B.Welles, New Haven: 180–217.

Brown, F.E., Rostovtzeff, M.I., Welles, C.B.
1936 New and revised material from the Temple of Azzanathkona, *The Excavations at Dura-Europos, Preliminary report of sixth season of work, October 1932 - March 1933*, ed. by M.I.Rostovtzeff, A.R.Bellinger, C.Hopkins, C.B.Welles, New Haven: 482–485.

Colledge, M.A.R.
1976 *The art of Palmyra*, London.
1977 *Parthian art*, London.

Culican, W.
1975 Syro-Achaemenian ampullae, *Iranica Antiqua*, XI: 100–112.

Culture of ancient Uzbekistan
1991 *Culture and art of ancient Uzbekistan*, catalogue to the exhibition, Moscow.

Cumont, F.
1926 *Fouilles de Doura-Europos (1922–1923)*, Paris.

Dar, S.R.
1984 *Taxila and the western world*, Lahore.

Downey, S.B.
1977 *The stone and plaster sculpture*, The excavations at Dura-Europos, Final report III, Part I, Fascicle 2, Monumenta archaeologica, 5, Los Angeles.

Dupont-Sommer, A.
1964 Une plaquette d'argent à inscription araméenne. Collection de M.Foroughi, *Iranica Antiqua*, IV: 119–132.

Faccenna, D.
1962 *Sculptures from the sacred area of Butkara I (Swat, W.Pakistan)*, IsMEO Reports and Memoirs, II:2, Roma.

Fenici
1988 *I Fenici*, catalogue to the exhibition Venice 1988, Milano.

Francfort, H.-P.
1984 *Fouilles d'Aï Khanoum, III, Le sanctuaire du temple à niches indentées, 2. Les trouvailles*, Mémoires de la DAFA, XXVII, Paris.

Frühe Phöniker im Lebanon
1983 *Frühe Phöniker im Lebanon. 20 Jahre deutsche Ausgrabungen on Kāmid el-Lōz*, catalogue to the exhibition, Mainz.

Gehrig, U., Niemeyer, H.G.
1990 *Die Phönizier im Zeitalter Homers*, catalogue to the exhibition Hannover 1990, Mainz.

Ghirshman, R.
1962 *Arte persiana. Parti e Sassanidi*, Milano.
1964 *Arte persiana. Proto-iranici, Medi e Achemenidi*, Milano.
1976 *Terrasses sacrées de Bard-è Néchandeh et Masjid-i Solaiman*, Mémoires de la Délégation Archéologique en Iran, XLV, Paris.

Glueck, N.
1965 *Deities and dolphins. The story of the Nabataeans*, New York.

Gnoli, G.
1995 Un emprunt iranien en araméen ignoré jusqu'à présent, *Au carrefour des religions. Mélanges offerts à Philippe Gignoux*, Res Orientales, VII, Paris, 87–93.

Göbl, R.
1971 *Sasanian numismatics*, Braunschweig.
1984 *System und Chronologie der Münzprägung des Kušanreiches*, Wien.

Goldman, B.
1991 Persian domed turibula, *Studia Iranica*, 20,2: 179–188.

Hopkins, C.
1934a Private houses, *The Excavations at Dura-Europos, Preliminary report of fifth season of work, October 1931 - March 1932*, ed. by M.Rostovtzeff, New Haven 1934, 31–72.
1934b The temple of Azzanathkona, *The Excavations at Dura-Europos, Preliminary report of fifth season of work, October 1931 - March 1932*, ed. by M.I.Rostovtzeff, New Haven: 131–200.
1936 The houses in block C3, *The Excavations at Dura-Europos, Preliminary report of sixth season of work, October 1932 - March 1933*, ed. by M.I.Rostovtzeff, A.R.Bellinger, C.Hopkins, C.B.Welles, New Haven: 106–139.

Hrouda, B.
1965 *Die Kulturgeschichte des assyrischen Flachbildes*, Bonn.

Invernizzi, A.
1996 Coppe e bracieri da incenso nell'oriente classico, *Atti del congresso Profumi d'Arabia, Pisa 19–21 ottobre 1995*.
(forthcoming) Incensieri dalla Mesopotamia partica, *Res Orientales*, XI, *Parfums d'Orient*.

Karageorghis, V.
1969 *Salamis in Cyprus. Homeric, Hellenistic and Roman*, London.
1982 *Cyprus from the stone age to the Romans*, London.

Katz, K., Kahane, P.P., Broshi, M.
1968 *Il Museon Israel di Gerusalemme*, Milano.

Khalil, L.
1986 A bronze caryatid censer from Amman, *Levant*, XVIII: 103–110.

King, L.W.
1915 *Bronze reliefs from the gates of Shalmaneser*, London.

Lefebvre, M.G.
1924 *Le tombeau de Petosiris*, Cairo.

Lyons, I., Ingholt, H.
1957 *Gandhāran art in Pakistan*, New York.

Marshall, J.
1951 *Taxila*, Cambridge (repr. Delhi 1975).

Masson, M.E., Pugačenkova, G.A.
1982 *The Parthian rhytons of Nisa*, Firenze.

Melikian-Chirvani, A.S.
1994 The international Achaemenid style, *Bulletin of the Asia Institute*, 7: 111–130.

Mellink, M.J.
1967 Archaeology in Asia Minor, *AJA*, 71: 155–174.

Moon, J.
1988 *Catalogue of the Early Dynastic pottery*, Abu Salabikh excavations, 3, London.

Moorey, P.R.S.
1973 Some Syro-Phoenician bronze caryatid stands, *Levant*, V: 83–99.

Moortgat, A.
1940 *Vorderasiatische Rollsiegel. Ein Beitrag zur Geschichte der Steinschneidekunst*, Berlin (2nd ed. 1966).

Niemeyer, H.G.
1970 Zum Thymiaterion vom Cerro del Peñón, *Madrider Mitteilungen*, 11: 96–101.

Niemeyer, H.G., Schubart, H.
1965 Ein ostphönikisches Thymiaterion vom Cerro del Peñón (Almayate Bajo, Prov. Málaga), *Madrider Mitteilungen*, 6: 74–83.

Oates, J.
1974 Late Assyrian temple furniture from Tell al Rimah, *Iraq*, 36: 179–184.

Parrot, A., Chéhab, M.H., Moscati, S.
1976 *I Fenici. L'espansione fenicia. Cartagine*, Milano.

Perkins, A.
1973 *The art of Dura-Europos*, Oxford.

Peters, J.P., Thiersch, H.
1905 *Painted tombs in the necropolis of Marissa*, London.

Pritchard, J.B.
1954 *The ancient Near East in pictures relating to the Old Testament*, Princeton.

Raspopova, V.I.
1960 Gončarnye izdelija sogdijcev čujskoj doliny. Po materialam raskopok na Ak-Bešime v 1953–1954 gg., *Trudy Kirgizskoj Arheologo-etnografičeskoj ekspedicii*, IV, Moskva: 138–163.

Reinach, S.
1909 *Répertoire de reliefs grecs et romains*, I, Paris.

Rosenfield, J.
1067 *The dynastic art of the Kushans*, Berkeley, Los Angeles.

Rostovtzeff, M.
1938 *Dura Europos and its art*, Oxford.

Rudenko, S.I.
1970 *Frozen tombs of Siberia. The Pazyryk burials of Iron-age horsemen*, London.

Safar, F., Muhammad Ali Mustafa
1974 *Hatra. The city of the Sun God*, Baghdad.

Sarianidi, V.
1977 Bactrian centre of ancient art, *Mesopotamia*, XII: 97–110.

Sarre, F., Herzfeld, E.
1910 *Iranische Felsreliefs*, Berlin.

Schmidt, E.F.
1953 *Persepolis* I, *Structures, reliefs, inscriptions*, OIP 68, Chicago.
1957 *Persepolis* II, *Contents of the Treasury and other discoveries*, OIP 69, Chicago.

Šiškin, V.A.
1963 *Varahša*, Moskva.

Sollgerger, E.
1974 The White Obelisk, *Iraq*, 36, 231–238.

Staviskij, B.Ja.
1964 Raskopki kvartala žiliš znati v jugo-vostočnoj časti pendžikentskogo gorodišča (Ob'ekt VI) v 1951–1959 gg, *Trudy Tadžikskoj arheologičeskoj ekspedicii*, IV, Moskva-Leningrad: 121–181.

Stern, E.
1973 *Material culture of the land of the Bible in the Persian period 538–332 B.C.*, Jerusalem-Warminster.
1980 Achaemenian tombs from Shechem, *Levant*, XII: 90–111.

Tanabe, K., ed.
1986 *Sculptures from Palmyra*, I, Tokyo.

Thureau-Dangin, F., Dunand, M.
1936 *Til Barsib*, Paris.

Tolstov, S.P.
1952 Horezmskaja arheologo-etnografičeskaja ekspedicija Akademii Nauk SSSR (1945–1948 gg), *Trudy Horezmskoj Arheologo-etnografičeskoj ekspedicii*, I, Moskva, 7–46.

Treasures of the Holy Land.
1986 *Treasures of the Holy Land. Ancient art from the Israel Museum*, catalogue to the exhibition, New York.

Vanden Berghe, L.
1959 *Archéologie de l'Iran ancien*, Leiden.

Voie royale
1986–1987 *La voie royale. 9000 ans au royaume de Jordanie*, catalogue to the exhibition, Paris.

Wigand, Th.
1912 Thymiateria, *Bonner Jahrbücher*, 122: 1–97.

Zarathustra
1993 - *Zarathustra und die Mithras-Mysterien*, cat. alla mostra Reinbeck bei Hamburg 1993, Bremen.

Zick-Nissen
1966 Knüpfteppich von Pazyryk und die Frage seiner Datierung, *AA*, 569–581.

Živopis' Pjandzikenta
1954 *Živopis' drevnego Pjandžikenta*, Moskva.

"SHIVA" HAS "GONE WITH THE WIND"
—OHÞO=VAYU RESTATED—

Katsumi TANABE*

Introductory remarks

In my article published in the *Silk Road Art and Archaeology*, Vol.2 (1991/92) I refuted the traditional view that the god OHÞO, depicted on Kushan coins was Shiva, and demonstrated that he was Vayu, one of the two Zoroastrian wind-gods. Since then I have come across two more interesting pieces of evidence which bear on the problem of OHÞO. Therefore, in this paper dedicated to Prof. Hideo Fujii I will introduce them and further discuss a few problems relating to my previous identification of OHÞO as Vayu.

1. *Newly-found coins issued by Kanishka I*

Two coins have recently appeared which cast fresh light upon the problem of OHÞO: a gold stater and a small bronze coin both issued by Kanishka I. The first piece is now in the possession of Prof. Ikuo Hirayama in Kamakura, Japan and the second belongs to Dr. med. Günter Roth in Germany. Prof. Hirayama and Dr. Roth have kindly allowed me to take photographs of their coins and to publish them.

A. Stater of Kanishka I (Fig. 1-a, b) (The Hirayama Collection)

Obv. Kanishka I wearing a diademed cap,standing to l. sacrificing over a small altar. He holds a beribboned spear in l.hand. His beard is worn by use. Dressed in long tunic, trousers, mantle and scarf. Flames are emanating from r.shoulder. Details such as sword, belt, clasp of mantle are also worn by use.
Greek legend: (from 1.00 clockwise) ΒΑΣΙΛΕΥΣ ΒΑΣΙΚΕΩΝ ΚΑΝΗΡΚΟΥ

Rev. Oesho wearing *dhoti* shown frontally to l., having four arms: upper r. with drum or *vajra*, lower r. with *ankuṣa* and vase (?), upper l.holding staff with trident, lower l. holding *mṛga* (stag or antelope) by its horns. Nimbate.
Greek legend: (from 2.00 clockwise) OHÞO

Examination of this coin has been obstructed because, when found, it had been set into a circular gold frame. Kushan gold coins were sometimes used for ornament as is already evidenced by a bracelet found in Khotan (Zeimal' 1990, Fig. 1–2). A similar framed piece (Fig. 2-a, b) in the Department of Coins and Medals,the British Museum has already been published by R.Göbl (Göbl 1964: 1967, II, pp.301–10, III, Taf. 92: 1976: 1984: 1993, pp.23–24, pl.27–1; Cribb/Errington 1992, pp.146, no.146). Both this new piece and the British Museum example are pendant ornaments. Both pieces were made with the same kind of frame : cheveron-patterned and granulated circles, decorated with beaded border, they were beyond any doubt made by the same workshop, probably by the same jeweller. Although the British Museum piece is dated by R.Göbl to the fourth century (after A.D. 330, Göbl 1993, p.24) because its obverse depicts the bust of a Roman emperor, probably Constantine the Great (307–37), the

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Fig. 1a Kanishka I standing at fire-altar. Stater of Kanishka I (obv.). The Hirayama Collection.



Fig. 1b OHÞO, Rev. of Fig. 1a.



a b

Fig. 2a Bust of a Roman emperor. Stater of Kanishka I (obv.). The British Museum Collection. Photo: Courtesy of the British Museum.

Fig. 2b Ardochsho, Rev. of Fig. 2a. Photo: courtesy of the British Museum.

newly-found gold coin itself (Fig. 1-a, b) cannot have been issued in the fourth century, but was surely made in the Kushan period. This is clarified by the worn condition of the new coin, while the British Museum piece is not worn at all, but looks freshly made. Therefore, we can take it for granted that the coin in this pendant (Fig. 1) is an original which had actually circulated in the Kushan period and later, and is not a later copy of Kanishka I's gold coin. The gold frame was only attached to it during the fourth century at the same time as the British Museum piece was made.

The most interesting and important feature of this gold stater lies in both its obverse and reverse legends. Although both are inscribed in Greek letters, the language of the reverse legend is Iranian (Bactrian) while that of the obverse Greek. It is well known that both legends on the earliest or inaugural issues of Kanishka I were written only in the Greek language (Rosenfield 1967, pp.54–55, pl. II, 30–33; Göbl 1960, p.94: 1984, pp.61–62, pl. 4). On the later issues of Kanishka I they were always in Iranian, i.e., Bactrian. We must call to mind that no Indian languages were used for Kanishka I's coin legends (BOΔΔO, BOϒΔO are Bactrian versions of the Indian name of the Buddha). Therefore, from the viewpoint of the language used for the legend, this piece must be an intermediary issue between the inaugural and the later, ordinary isssues of Kanishka I.

As for the image of OHÞO on the reverse, the four-armed male is almost identical to that on Kanishka I's other examples (Rosenfield 1967, pl. II-34, VIII-158, 159, 160; Göbl 1984, pls.5–9).

B. Bronze coin of Kanishka I (Fig.3-a, b) (Dr. Roth Collection)

Obv. Kanishka I wearing a cap, standing to l. sacrificing over a small altar. He holds a spear in l. hand. Dressed in long tunic, trousers, boots, and mantle. Other details are worn by use.
Greek legend: (from 1.00 clockwise) ÞAO KANHÞKI

Rev. Oesho wearing *dhoti* shown frontally to l., with head in profile having two arms: l. hand holding a vase.
Greek legend: (from 1.00 clockwise) OAΔO



Fig. 3a Kanishka I standing at fire-altar. Bronze coin of Kanishka I (obv.). Dr. med. Günter Roth Collection.



Fig. 3b OHÞO, Rev. of Fig.3a.

Somewhat the same types of OHÞO can been seen on the bronze coins of this king published by R.Göbl (Göbl 1984, p.44, pls.82–813). This reverse type also depicts the standard type of OHÞO image, but it is completely different from other types in the sense that the Bactrian legend is not OHÞO but OAΔO. OAΔO is a Kushan wind god (Fig. 4). However, the figure (Fig. 3-b) of this unique piece is beyond any doubt that of OHÞO and not that of OADO at all. How should we understand this contradiction? Is it a simple mistake of the die-cutter or die-designer? If it were, how did it happen? One possibility might be that this mistake was caused by the similarity of the two legends both with exactly the same number of Greek letters: OAΔO and OHÞO. Furthermore, the first and the last letters are Os in both legends. The only difference between these two legends are the Greek letters AΔ and



Fig. 4 Oado. Bronze coin of Kanishka I (rev.). Mr. Hidaka Collection.

HÞ. Furthermore, Greek Δ is sometimes quite similar in the shape to Þ. From this evidence it is conceivable that the die-cutter or die-designer confused OHÞO with OADO. If this was the case, this bronze coin might lose its unique value, and no longer be good evidence to prove that OHÞO is a wind god.

Another possibility might be that this mistake was caused by the die-cutter or die-designer on the premise that OHÞO was another Kushan wind god. Among the (Mazdean or Zoroastrian) priests the distinction between Vayu and Vata was surely clear, but among laymen it might have been less. Therefore sometimes Vayu might have been confused with Vata. If this was the case, a die-cutter or die-designer might have possibly used the legend of OAΔO mistakenly or carelessly for OHÞO. However, at the present stage of our knowledge about Kushan numismatics, it is almost impossible to conclude definitively either way.

2. *Discussion*

In my previous article I discussed the figure and legend of OHÞO and came to the conclusion that OHÞO is another Kushan wind god (Tanabe 1991/92). My identification depends mainly upon the identification of the Sogdian Wēšparkar (Fig. 5) with OHÞO, which was first proposed by H..Humbach (1975, pp.402–08) and later corroborated by A.D.H.Bivar (1988, p.16,note 10), M.Boyce (1993) and F.Grenet (1994, pp.42–43). Some scholars have not agreed with this identification (Gnoli 1980, p.82; Gail 1992/93; Lo Muzio 1995/96). Recently J.Harmatta has also cast doubt on this identification (Harmatta 1995, p.155). However, he did not give any convincing counter-arguments and did not in any way prove his case. In my opinion, those who are against the identification of Wēšparkar with Vayu are completely mistaken, because they do not take into consideration the horn held by Wēšparkar (Fig. 5). In this image the wind is coming out from the upper opening of the horn. The horn is one of the attributes of the wind personification in Late Roman and Mediaeval art (Raff 1978, figs.12, 15, 16, 24, 68, 74, 101, 109, 112 etc.) and is properly applicable to the wind god.

Therefore it is beyond any doubt that Wēšparkar is wind god. As for the identification of Wēšparkar, E.Benveniste opined once that Wēšparkar was Vishvakarman,i.e. the all-creating god (Hephaistos in Indian mythology), but his identification is hardly tenable, because the images of Vishvakarman attested in Gandharan, mediaeval Indian and Japanese art prove to be totally different iconographically from that of Wēšparkar (Tanabe 1995/96). Therefore, H.Humbach's explanation that Wēšparkar is nothing other



Fig. 5 Wēšparkar (upper body). Pyandjikent, 7-8th century.

than *Vayuš uparō kairyo* (Vayu working on high) is quite reasonable (Humbach 1975, p.404; Boyce 1993, p.36). In other words, *Vayuš* was transformed into *Veš* or *Weš* in the seventh-eighth century, and was probably called *Vesh(u)* or *Vesh(a)* in the Kushan period. The initial Greek letter O was used sometimes in Bactrian for expressing V or W during the Kushan period (Tanabe 1991/92, pp.53–54).

Furthermore, OHÞO is sometimes depicted with three heads (Rosenfield 1967, pp.92–93, pl.VIII-163, 64; Göbl 1984, pl.26-no.367, 68), which corresponds well with the description of three-faced Wēšparkar written in Sogdian text (*δry ryth*=three faces, Benveniste 1946, p.58; Humbach 1975, p.403). Although M.Boyce regards the three-faces of Wēšparkar to be derived from the function of Vayu as *a being of great power, sustainer and destroyer of all*, just like Shiva (Boyce 1993, p.36), I prefer the supposition that the two lateral heads of three-headed OHÞO and Wēšparkar (Fig. 5) symbolized the two contradicting aspects of Vayu : the good wind (*Vāy i vēh*) and the bad one (*Vāy i vattar*) (Widengren 1938, pp.194–97; Boyce 1993, p.37). The distinction of the good and bad is clear in this image of Wēšparkar (Fig. 5), for the left-lateral head is something like an attractive young woman (=good), while the right-lateral one is that of an ugly demon(=bad).

To sum up the above, these two iconographical features of Wēšparkar lead us to suppose that OHÞO was another Kushan or Zoroastrian wind god Vayu. It is pointed out that in Sogdiana the image of Shiva was excavated and also that Wēšparkar=Vayu was syncretized with Shiva, but this does not prove at all that OHÞO was Shiva during the Kushan period, because this syncretism was due to the influence of Hindu iconograpgy on Sogdian art solely from the seventh to eighth century (Grenet 1994).

In this connection, I must mention G.A.Pugachenkova's identification of OHÞO with the Oxus river (God), which I did not take into consideration when I wrote my article quoted above (Tanabe 1991/92). G.A.Pugachenkova opined that OHÞO was actually OKÞO (=Oksho) and not OHÞO (Oesho), and identified this god as the god of the Oxus River fused with Shiva (Pugachenkova 1977, p.83:1989, pp.24–25, 27). However, the river god Oxus can be identified with OAXÞO=Oachsho holding the trident of Poseidon (on Huvishka's gold coin only: Rosenfield 1967, p.92, pl.VIII-155; Göbl 1984, p.43,

pl.18-no.241). Therefore her identification is not tenable either.

Next I will attempt to criticize again the identification of OHÞO with Shiva. First of all, if OHÞO were Shiva (=Bhaveśa, Beṣa, Bhūteśa, Vṛṣa), it means that Kanishka I was most likely a convert to a Shaivite sect (Hinduism). If he had become a follower of Shiva, it is quite strange that Kanishka I ordered the representation of several Zoroastrian gods, such as Mithra (Helios), Mah (Salene), Atar (Hephaistos) and Vata (Anemos), on the reverses of his inaugural coin issue (Tanabe 1995a). These four gods were included among the principal old Iranian gods who were recorded by Herodotos and Strabo (*Herodotus* Book I, 131, Loeb Classical Library, Godley 1975, p.171; Strabo, *Geography*, 15, 3, 13; Loeb Classical Library, Jones 1966, p.174; Benveniste 1929, pp.23, 51), and this fact eventually leads us to surmise that Kanishka I was an ardent Zoroastrian (Mazdean) or believed in the old Iranian religion, probably similar to Zoroastrianism (or Zurvanism). If he was a Zoroastrian, it is unconceivable that he would adopt a Hindu god as one of his tutelary gods from the time of his enthronement. At least we must take into serious account the fact that Kanishka I changed the Greek names of these five gods into Bactrian, i.e.Kushan (Zoroastrian or Mazdean) ones, and not into local (Gandharan or Indian) ones (Helios/Miiro,Salene/Mao, Hephaistos/Athsho, Anemos/Oado, Nanaia/Nanā, Göbl 1984, pls.4–5). According to the observations of these Kushan deities by D.W.MacDowall, R.Göbl and J.Cribb, "OHÞO appeared alongside five other gods, Mithra (sun god), Mao (moon god), Athsho (fire god), Oado(wind god) and Nanā(goddess with lion and sceptre), *as the core of this range*" (MacDowall 1978, p.311; Göbl 1983, pp.82, 85:1984, pp.18–19; Cribb 1997, forthcoming). It is then clear that this core of Kanishka I's pantheon must have been purely Zoroastrian or Mazdean, and that it had no room for including Shiva from the religious view-point (as for Nanā=Nanaia, see below). Therefore, OHÞO is basically Iranian, and not Indian.

However, some Indianists might argue that Kanishka I adopted the images of the Buddha Shākyamuni and the Buddha Maitreya on his coins (as for these images,see Cribb 1984). However, the adoption of these Buddhist images were much later in his reign and Kanishka I was perhaps much influenced by the fact that many Kushans were converting to Buddhism, as is evidenced by the Kushan donors depicted in Gandharan and Mathuran Buddhist reliefs, and that Buddhist culture was then prevailing in the Kushan realm. On the contrary, there is nothing to prove that the Shaivite religion was as popular and influential as Buddhism in Gandhara and its adjacent regions (the core of the Kushan empire) during the Kushan period, although in Central India (*Aryavarta*) *liṅgas* and other icons relating to Pre-Kushan Shaivite religion are sporadically attested (Srinivasan 1984). Therefore, we should not place the Shaivite religion at the same level as Buddhism as far as Kanishka I's coinage is concerned.

In addition to these circumstances, the goddess Nanaia of Mesopotamian origin was also depicted on the reverse of Kanishka I's earliest coin issue (Tanabe 1995a, fig. 2–1). This goddess' cult had spread to Bactria considerably earlier than the Kushan period. Therefore, she must have been worshipped widely by the local Iranians and had already been incorporated into the Kushan pantheon before Kanishka I became king of the Kushans. Consequently this fact does not signify that when Kanishka I started his reign he was tolerant enough towards religions other than the Zoroastrianism and the old Iranian religion (Mazdeism), to adopt a Hindu god.

Furthermore, Nanā (ia) is depicted together with OHÞO on the reverse of Huvishka's quarter-dinar, making a pair with OHÞO (Göbl 1984, pl.168-Nanā/Oēsho 1; Tanabe 1991/92, p.58). Nanā is not an Indian goddess but rather Iranian, so that her counter-part should also have been Iranian, i.e. Vayu (cf. Mode 1992, p.330; according to Sims-Williams, the traditional identification of OMMA=NANA with Umā Pārvatī, the wife of Shiva is phonetically problematic, Cribb/Sims-Williams 1995/96, p.84).).

From the linguistic viewpoint, Shiva cannot be equated with OHÞO (Vēsho), and furthermore, other epithets of Shiva such as Vṛṣa, Bhūteśa, Beṣa, bhaveśa and so on, are not attested in Gandharan epigraphic materials. Therefore, Shiva and his epithets (other names) cannot be equated with OHÞO at all.

From the above, we may say that when Kanishka I wanted to depict the core of his pantheon on the reverses of coins, he probably adopted the image of OHÞO because it had already been represented on the reverse (Fig. 6) of the coins of Wema-Kadphises (the second Wema, see below p.270) and had become well known to local people. Although this male god on Wema-Kadphises' coins is not designated as OHÞO, it is beyond any doubt that the image of OHÞO (Fig. 7) on Kanishka I's coins is modelled to a certain extent after Wema's OHÞO and it was simply named as OHÞO.



Fig. 6 OHÞO. Double stater of Wema II Kadphises (rev.). The Hirayama Collection.



Fig. 7 OHÞO. Stater of Kanishka I (rev.). The Hirayama Collection.

However, there is a big iconographical difference between the two images, because Kanishka I's is four-armed and accompanied by a stag or antelope while Wema's is two-armed, holding a trident and accompanied by a bull. In spite of these differences, the image of the male god on Wema-Kadphises' coins is fundamentally identical with OHÞO on Kanishka I's issues.

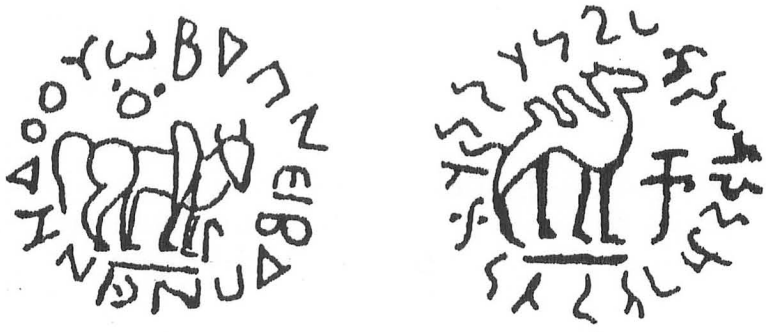
As for the image of OHÞO on Wema-Kadphises' coins, somewhat the same can be said as I argued about OHÞO on Kanishka I's coins. If OHÞO were Shiva, Wema-Kadphises (II) must have been converted to a Shaivite sect or Hinduism, casting aside his Zoroastrian or old Iranian religion when he conquered India or became king of kings of the Kushans. However, there is no good reason why he should have converted himself to an alien religion held by some of the peoples conquered by him or his father (Wema I, see below). Furthermore there is no significant evidence to prove that the Shaivite sect was popular enough among the Indians, including the Gandharans, and other neighbouring peoples, to make it a decisive influence upon the religious policy of Wema-Kadphises (II) during his reign.

Needless to say, some have thought that because the Kharoshthi legend on Wema-Kadphises' coins contains the title "*mahīśvara*", a later epithet of Shiva, he therefore must have been Shaivite. However, this epithet does not necessarily mean that he was a follower of Shiva, but it is simply a royal epithet, meaning "great being" or "great lord" and applicable to any god and king (Yamada 1971, 1983). In my opinion, this epithet and another epithet "*sarvaloga īśvara*" on Wema-Kadphises' coins is originally not Indian but Iranian, which correspond exactly with the Achaemenid royal epithets "*xšāyathiya vazraka* (great king)" and "*xšāyathia haruvahyāya būmiya* (king of the entire world)". Therefore, this epigraphical connotation offers no proof that Wema-Kadphises (II) was a Shaivite or that OHÞO was Shiva, because it was a simple translation from Old Persian into Indian or local language.

In addition, even the bull on the reverse of Wema-Kadphises' (II) coins cannot corroborate the identification of OHÞO with Shiva (Fig. 6). Although this bull has been identified by many Indianists

as Nandin or *Vṛṣabha*, the companion of Shiva, another interpretation, i.e. a Zoroastrian one, is possible. According to *Rām Yašt*, Vayu could be related to the bull (Wolff 1910, p.268; Wikander 1941,p.1). The bull might have been a very important element of Vayu-worship and Vayu has a close relation with flocks of domesticated animals (*Viehherde*), as Wikander observed (Wikander 1941, pp.20–22). In addition, in Zoroastrianism the bull is also associated to fertility, dependent upon ample water, i.e. rain brought by Vayu (Gray 1928, p.170; Brunner 1978, pp.77–80).

Furthermore, the recently found Rabatak Inscription clarified that there were two Wemas : the first Wema is Wema I Takto (*Ooemo Taktoo*) and the second is Wema II Kadphises (Cribb/Sims-Williams 1995/96, pp.80, 94). Wema I Takto, father of Wema II Kadphises issued bronze coins on the obverse of which is depicted an Indian humped bull and on the reverse a Bactrian two-humped camel (Fig. 8-a, b), continuing the same types depicted on Kujula-Kadphises' bronze coins (Fig. 9-a, b, Mitchiner 1976, pp.690–93: 1978, pp.393–94). These coins had formerly been assigned to Kujula-Kadphises until Joe Cribb attributed some of them to Wema-Kadphises (Cribb 1981). However, according to Joe Cribb and N.Sims-Williams, the relevant bronze coins were actually issued by Wema I Takto, whom they recently identified in a newly found Bactrian inscription (Cribb/Sims-Williams 1995/96, pp.97–98, 118–23). In my opinion, the obverse and reverse types of Wema I Takto's bronze coins are intimately related to the image of OHÞO depicted on the reverse of Wema II Kadphises' coins (Fig. 6).



a b

Fig. 8a Humped bull. Bronze coin of Wema I Takto. After Cribb 1981, figs. 3, 4.

Fig. 8b Two-humped Bactrian camel, Rev. of Fig. 8a.



Fig. 9a Humped bull. Bronze coin of Kujula-Kadphises. The Hirayama Collection.



Fig. 9b Two-humped Bactrian camel, Rev. of Fig. 9a.

The bull on Wema I Takto's issue must have the same symbolic meaning as that on Wema II Kadphises' coins. The bull is also connected with the two-humped Bactrian camel on the reverse. This camel is intimately related to Verethragna who brings *Xvarnah* (Royal Glory, Victory) to the king. This same notion was represented by the figure of a king on a two-humped Bactrian camel on a coin issued by the Indo-Scythian king Azes I (Fig.10-a, b, Mitchiner 1976, p.502, types 761–62:1978, pp.322–23, 327).



Fig. 10a King on Bactrian camel. Bronze coin of Azes I. The Hirayama Collection.



Fig. 10b Humped bull, Rev. of Fig. 10a.

According to the *Bahrām Yašt* (XIV,11) and the *Vendīdad* (XIX, 37), Verethragna is qualified as bringer or possessor of *Xvarnah* (baro x^{v}*areno*, *barat* x^{v}*areno*). The fourth incarnate of Verethragna, i.e. two-humped Bactrian camel, is also represented as the support (seat) of two sitting deities (Pharro and Aši=Ardochsho) in Sogdian paintings (Rosenfield 1967, p.95; Grenet 1993, pp.153–59).

Therefore, the king on the two-humped Bactrian camel means that *Xvarnah* was brought to the king by Verethragna, and the two-humped Bactrian camel is accordingly intimately related to *Xvarnah*-bringing Verethragna. The combination of the two-humped Bactrian camel and the humped bull was also first featured as a coin design by the above-mentioned Indo-Scythian king Azes I.

On the other hand, these two animals could also be said to symbolize two separate regions; the camel—Bactria or Central Asia: the bull—India, but the humped bull was not always exclusively a symbol of India, as the Iranians also venerated the same kind of bull (Brunner 1978, pp.77–80). However, as far as the coin-types of the Indo-Greeks, Indo-Scythians and Indo-Parthians are concerned, this kind of regional or territorial symbolism is hardly tenable. Coin types should rather be associated with the gods and goddesses depicted as Kushan royal tutelary deities, or have some other religious connotations. Taking into account the fact that these two animals were replaced by a new type showing OHÞO accompanied by a bull on the reverse of the coins of Wema II Kadphises, it becomes clear that the figure of OHÞO is intimately connected with the two-humped Bactrian camel, which has nothing to do with Indian culture and Hinduism. In other words, the two-humped Bactrian camel was a theriomorphic representation of OHÞO.

On the Kushan coinage, the deities depicted on the reverse are almost all Zoroastrian or Old Iranian (Mazdean). Consequently the two-humped Bactrian camel can be regarded as a symbol of the Zoroastrian war- and warrior-god, Verethragna (=the fourth of ten incarnations of this god, Darmesteter 1883, p.234; Wolff 1910, p.260). As Verethragna is said to come to Ahura Mazda in the shape of a bull (*Bahrām Yašt*, 7), it is possible to regard the bull also as another (second) incarnation of Verethragna

(Darmesteter 1883, p.233; Wolff 1910, p.259).

Therefore, we might be allowed to conclude that both animals symbolize Verethragna. In other words, the bull on Wema II Kadphises' coins is not originally *Nandin* nor *Vṛṣabha* and therefore related to Shiva, but a theriomorphic representation of the Zoroastrian war- and warrior god Verethragna who brings *Xvarnah* (Royal Glory and Victory: *baro-* or *barat* x^{v}*areno*) to the king (*Bahrām Yašt* XIV, 2, *Vendīdad* XIX, 37). The *Xvarnah* (Pharro in Bactrian language) depicted as a ring, diadem and fillet can be observed to be held by OHÞO represented on Kanishka I's, Huvishka's, Vasudeva I's, Vasudeva II's, Kanishka II's and Kanishka III's coins.

However, the identification of OHÞO (bull and camel) with Verethragna is impossible, because the image of Verethragna is depicted on the coins of Kanishka I. Solely on Kanishka I's coins Verethragna, called OÞΛΑΓNO (Fig. 11), is represented anthropomorphically as a Central Asian princely figure wearing a falcon-headed cap and holding a spear (Carter 1995, pp.123–26). This princely figure is quite enigmatic, because Verethragna was usually assimilated to and represented by Heracles in Western Asia after Hellenistic culture was transmitted into this region. In the Kushan period, the image of Heracles was used to represent Vajrapāṇi in Gandharan Buddhist reliefs. On the Kushan coinage, Heracles was depicted exceptionally on the reverse of Huvishka's coins, where in my opinion, he represented Verethragna or even Heracles himself (Rosenfield 1967, pp.77–78, pl.IV-73; Göbl 1984, p.41, pl.165).



Fig. 11 OPLAGNO. Stater of Kanishka I (rev.). The Hirayama Collection.

Why did Kanishka I decide not to adopt Heracles for depicting Verethragna and instead invent a new type? It seems strange because the image of Heracles had been fully exploited by the Greco-Bactrian, Indo-Greek and Indo-Scythian kings and was therefore quite familiar to people in Central Asia and India at the beginning of the Christian Era. Therefore, the naked image of Heracles would have been the most appropriate form of representation for Verethragna=OÞΛΑΓNO. However, Wema II Kadphises and Kanishka I never employed the image of Heracles on their coins, which is quite curious. There must therefore have been a serious reason which compelled Kanishka I not to use the image of Heracles. The main reason why Kanishka I did not use Heracles to depict Verethragna, was, in my opinion, that the image of Heracles had already been applied to a god other than Verethragna =OÞΛΑΓNO, on the coins of both Wema II Kadphises and Kanishka I. The very god who was depicted in the garb of Heracles on their coins is, in my opinion, no other than OHÞO=Vayu, one of whose functions is precisely identical to that of Verethragna=OÞΛΑΓNO, i.e. war-and warrior god (*Rām Yašt*, 46, 47, 48, 57: Gray 1928, pp.117–19; Widengren 1938, pp.193–94, 210: 1961, pp.123–28: 1968, pp.33–34; Wikander 1941, pp.8–12, 29, 87).

From the iconographical viewpoint, the naked body of OHÞO is fundamentally related to that of Heracles, as has already been stated by D.W.MacDowall (1978, p.311; Rosenfield 1967, p.93). However, I am not inclined to agree completely with his interpretation that the image of OHÞO was replaced by Heracles (HPAKIΛO) on Huvishka's coins (MacDowall 1978, p.312; as for this piece of the British Museum collection, see Gardner 1886, pl.XXVII-15; Rosenfield 1967, pl.IV-73; in contrast Göbl 1984, pls.20, 92–93, 165). In my opinion, the image of HPAKIΛO replaced that of Kanishka I's OÞΛΑΓNO=Verethragna (Fig. 11), because the latter is not depicted on Huvishka's coins at all, while OHÞO is still depicted on several types (Göbl 1984, pls.13, 23, 26, 87, 88). The absence of OÞΛΑΓNO=

Verethragna from Huvishka's pantheon is quite strange. Most probably, then, Huvishka's coin-designer adopted Hellenistic Heracles to replace the image of OÞΛAΓNO, as depicted exceptionally on Kanishka I's gold coins (Fig. 11) (Rosenfield 1967, pl.IX-167, 68; Göbl 1984, pl.8-no.65).

The use of more Hellenized images of Kushan=Zoroastrian deities can be attested on Huvishka's coins: Nike=Xvanindo, Hephaistos=Vulcanus=Athsho. For example, if we compare the image of Athsho on Huvishka's gold coins with that on Kanishka I's, we can immediately recognize that the former is more Hellenized or Greco-Romanized than the latter, because the former has a pair of tongs and a hammer, which were derived from the attributes of Hephaistos/Vulcanus, while the latter has only a pair of tongs (Tanabe 1995/96; Göbl 1984, pls.4-no.33, 17-no.208–11). Huvishka's coin image of Athsho was derived from versions of Hephaistos/Vulcanus which as a rule hold both attributes and was therefore more faithful to its Hellenistic original than Kanishka I's. This fact indicates that the Hellenization or Greco-Romanization of the Kushan pantheon on coinage took place again during Huvishka's period. In addition to these, Sarapo=Serapis (Alexandrian god) was first introduced by this king onto the Kushan coinage (Göbl 1984, pls.14-no.164, 15-no.165:1993, pl.45-no.230; Bivar 1988).

These exceptional pieces of Huvishka suggest that Greco-Roman iconography was being transmitted to the Kushan empire during the reign of this king. The adoption of Heracles by Huvishka means that, during his reign, the OHÞO image became completely and distinctly established as Vayu, not as Verethragna. Therefore, there was no reason to avoid the image of the Hellenistic Heracles to represent Verethragna, quite contrary to Kanishka I's period when OHÞO was still confused with Verethragna, so that a Heracles image could not be used for Verethragna=OÞΛAΓNO.

Although I wrote above that I am not inclined to agree completely with D.M. MacDowall's identification of OHÞO=Heracles on Huvishka's coin, my another hypothesis mentioned above depends solely on the premise to the effect that Huvishka was also an ardent devotee of Verethragana=OÞLAGNO just like Kanishka I was. However, if Huvishka was not so, I must admit D.M.MacDowall's identification that the image of Heracles is to be identified with OHÞO on Wema II Kadphises' and Kanishka I's coins and also on the bull and camel coins of Kujula-kadphises. In this regard J.Cribb also stated more clearly that OHÞO was omitted from the issues of one of Huvishka's mints midway through his reign, and that his place in the core group of gods (see above) was apparently taken by Heracles (Cribb 1997, forthcoming).

Whether we admit D.M.MacDowall's argument and identification or not, the figural relationship of OHÞO as Heracles seems to be confirmed by the linguistic evidence that the image of OHÞO on the earliest issues of Kanishka I (cf. Fig. 1b) was originally inscribed with the Greek name HPAKΛHΣ (Cribb/Sims-Williams 1995/96, p.110: the British Museum collection preserves the trace of HPAKΛHΣ, and thanks to J.Cribb's drawing and indication of the legend concerned, which was sent to me by fax, I could recognize the remaining parts of Greek letters such as H, A, K on the Prof. Hirayama's gold coin, above Fig. 1b). Similar remains of original Greek legend overlapped by the previous Bactrian one is already attested by another gold coin of Kanishka I in the possession of Prof. Hirayama (HΦAIΣTOΣ under AΘPO, Tanabe 1995/6, Fig. 14b).

Consequently it is now clear that the Greek name of Heracles was not applied to Verethragna but to OHÞO. This is the reason why the Kushan Verethragna=OPΛAΓNO (on Kanishka I's coins only) is totally different iconographically from the West Asian and Central Asian Hellenistic type of Heracles=Verethragna.

This fact is very important for identifying OHÞO, because the assocciation with Heracles is very significant. Most probably this name was employed for OHÞO because OHÞO shared the same function with Verethragna=OÞΛAΓNO. As is stated above, Verethragna and Vayu share the function of war- and warrior-god, so that the name of Heracles=Verethragna could be applied to Vayu. Although Heracles is often said to have been identified with Vasudeva=Krishna, Shiva and Indra (von Schroeder 1914), that surmize is dependent upon the descriptions of India left by some Greek and Latin authors. These

literary sources only reflect ill-informed Western responses to Indian culture but have nothing to do with the Iranian and Kushan views on Heracles. Such westernized views cannot therefore be applied directly to the Kushans and the Kushan pantheon. Therefore, it is better to exclude the problem of the identification of Heracles with the Indian deities when we deal with the gods depicted on the Kushan coins (against the assimilation of Heracles to Indra, cf. Karttunen 1989). The same holds true of the identification of Shiva with Dionysos (Kirfel 1953; negative view, cf. Karttunen 1989).

Although Verethragna is intimately related to another Zoroastrian wind god Vata=OADO (first incarnation of Verethragna in the *Bahrām Yašt* 2, Darmesteter 1883, p.231; Wolff 1910, p.259), it does not necessarily exclude Verethragna's similarity and relation to Vayu. As is mentioned above, it may suffice that like Verethragna Vayu is also a war- and warrior god. Furthermore, according to the *Dēnkard* (IX, 23) and the *Sutkar Nask* (12), the fourth incarnate of Verethragna, i.e. the camel is also identified as being associated with Vayu (Darmesteter 1892/93, p.560; Gray 1928, p.169; Widengren 1938, p.202; Gnoli 1988, p.511; Benveniste/Renou 1934, pp.35–36). Therefore, it is quite plausible that the two-humped Bactrian camel on these bronze coins (Figs. 8b, 9b, 10a) does not symbolize Verethragna himself but Vayu, as another incarnation of Verethragna.

Because the Bactrian camel has nothing to do with Indian culture, it could not be used to symbolize Shiva. If it did symbolize Vayu, the bull on the reverse might also symbolize some function of Vayu, because the reverse design was most likely related to the same religious concept as that of the obverse. Another function of Vayu is to bring fertilizing rain=water to the earth (Gray 1928, p.170; Gignoux 1988, p.390, Vayu is related to Tištar=rain-bringer; Boyce 1993, p.38; Panaino 1995, pp.15–23, 25–45).

Therefore, even if this bull belonged to Indian culture rather than to Central Asian and Iranian culture, none the less it could still symbolize the fertility and fecundity of the earth brought by Vayu (cf. above, p.270). In other words, the bull and Bactrian camel (Figs. 8, 9, 10) together symbolized theriomorphically the two distinct functions of Vayu: war- and warrior god represented by the Bactrian camel, and rain-bringer and fertility represented by the humped bull). One half (i.e. the Bactrian camel) of this theriomorphic representation was changed into an anthropomorphic representation (i.e. OHÞO) on the reverse of Wema II Kadphises' coins (Fig. 6) on the basis of the functional association of Heracles=Verethragna=Vayu.

Furthermore, in order to emphasize the second function, i.e. that of bringer of rain and fertility and to diminish the first function, many attributes, mainly borrowed from the Indian iconography, then available in Gandhara, were added to the image of OHÞO. They are as follows:

The vase held by OHÞO on Kanishka I's coins is *not an attribute of Shiva* but of *the Zoroastrian river-yazata, Anahitah and of Greek river-gods* and symbolizing Vayu as *bringing water through rain* (Boyce 1993, p.38). According to M.Boyce, it was for this function of bringing water through rain that Vayu was venerated by the eastern Iranians, including the Kushans (Boyce 1993, p.38). It is certain that Vayu was intimately connected with fertilizing rain, for this reason he had special epithets such as *ayaoza* (causing [water] to surge forward), *payaoza* (causing [water] to surge away) and *vivaoza* (causing [water] to surge apart) (Gray 1929, p.170). He was also known as Vayu the Good (*vây i vēh*) in his role as the deity of the storm-wind (Gray 1929, p.170; Humbach 1975, p.407). This function might be indicated also by his trident which was the attribute of Poseidon associated with storms at sea (cf. coins of Antimachos I and Azes I, Figs. 12, 13). The replacement of Heracles' club by the trident of Poseidon means the reduction of the war-god's character and the enhancement of the character of fertility-god as rain-bringer.

Furthermore, the *vajra* (thunder-bolt) held by OHÞO on Kanishka I's coins is also associated with water through thunderstorms and thunderclouds (cf. Indra assimilated to Zeus=Ahura-Mazda and also Heracles=Verethragna) as forerunners of rain. Most probably the shape of *vajra* was imitated from that held by Vajrapāṇi depicted in Buddhist reliefs of Gandhara, for certain images of Gandharan Vajrapāṇi were derived from that of Heracles, although the *vajra* held by Heracles=Vajrapāṇi belonged originally



Fig. 12 Poseidon. Tetradrachma of Antimachos I. The Hirayama Collection.



Fig. 13 Poseidon and river god. Square bronze coin of Azes I. The British Museum Collection. Photo: Courtesy of the Museum.

to Indra=Verethragana (one of Indra's epithet is Vajrapāṇi=holding a *vajra*).

As for the *ankuṣa* (elephant-goad) which is purely an Indian instrument (that of Indra as rain-bringer), it is also associated with water, because the (white) elephant (*Airāvana*) was regarded as a bringer of rain (Hopkins 1915, p.127; Gupta 1983).

Therefore, these four attributes of OHÞO can be interpreted as associated with the function of Vayu as bringer of rain and fertility on earth, and does not need to be connected exclusively to Shiva. The fifth attribute of OHÞO, i.e. the stag, is intimately connected to Vayu moving rapidly (cf. Indian medieval Vayu seated on stag, Majumdar 1943; Mallmann 1963, pp.132–34; Sahai 1975, pp.53–54).

To sum up the above, various attributes which seem to have been derived from Indian iconography were added to the image of a Heracles-like OHÞO on Wema II Kadphises' coin (Fig. 6) in order to give more distinctive features to the second function of Vayu=OHÞO on Kanishka I's and Huvishka's coins (Fig. 7).

The above iconographical explanations may suffice to cope with the criticism put forward by some scholars against my identification of OHÞO as Shiva. They have claimed that the image of OHÞO does not reveal any iconographic features of Vayu or of any other Iranian deity (Marshak 1995/6, p.177; Lo Mucio 1995/96, p.40). It is true that some of the attributes of OHÞO (*ankuṣa*, erect penis) are purely Indian, but not all of them, and some indeed are Gandharan or Greco-Iranian (diadem, nimbus, club). Even if some attributes are taken from Indian iconography, it does not necessarily follow that the deity with such attributes is Indian. Rather it simply means that the die-cutter or designer borrowed these Indian attributes to represent anthropomorphically an Iranian god when he could not avail himself of ready-made Iranian iconographical features. This was quite plausible because the Iranians were traditionally aniconic rather than idol-worshippers. They seem not to have maintained a figurative tradition to provide anthropomorphic representations of Zoroastrian gods (cf. Achaemenid art).

This supposition has been amply and perfectly corroborated by J.Cribb's detailed and convincing analysis of the iconographic features of the full range of Kushan OHÞO types (Cribb 1997). He has definitively demonstrated that the iconography of OHÞO was derived mainly from that of Indian gods including Shiva, but that the image itself represents not Shiva but Vayu in the guise of Shiva. Lastly I must explain the reason why the Greek name for the wind (Anemos) was not used by Kanishka I when

he adopted the Greek name of Heracles for OHÞO. Firstly this name (Anemos) had already been employed on Kanishka I's coins for another wind god OADO=Vata. Anemos means the wind in general, but not any particular wind. The Greeks had not made an image of Anemos. Therefore, the Kushan Anemos image is a new invention made by the Kushans through the combination of iconography of Boreas (the north wind) and Coelus (god of the sky=atmosphere) (Tanabe 1990, fig. 7; 1995b, p.247).

In any case Kanishka I could not use the name of Anemos for the other wind god Vayu, because it had already been employed for OADO=Vata. Therefore, he used the name of Heracles, although it was not appropriate, for Vayu=OHÞO.

If we take into account the fact that the image of OHÞO on Wema II Kadphises' coins is different from that of Greek and Roman Heracles, although the former was derived from the latter, as D.W.MacDowall observed, we should observe that the club of Heracles was replaced by the trident of Poseidon. This replacement is very significant, because it diminishes the salient feature of Heracles, and in so doing adds the characteristics of Poseidon as storm-god, which is more suitable for the image of wind-god Vayu=OHÞO. Probably the trident was employed to emphasize Vayu's close relation with water on the OHÞO image, because the Bactrian camel, one incarnation of this god could be associated to water, river and also the water under the earth as is attested by the Uzbeks in Khoresm and the Chinese (Snesarev 1969, pp.317–18; Schafer 1950, p.267). If it were so, the Bactrian camel was considered as Vayu who brings water and rain like the bull.

From the above argumentation, I think that the identification of OHÞO with Shiva is extremely doubtful. Rather I think that we should take into account the fact that Kanishka I adopted four Zoroastrian gods and especially the wind god Vata=Anemos. In the old Iranian religion and Zoroastrianism (Mazdeism), the Iranians believed in two wind gods, Vata and Vayu just like the Indians (Hindus) did (Widengren 1938, pp.188–230). Herodotos also mentioned the worship of winds (*anemoi*) among the Iranians of the Achaemenid period (Godley 1975, p.171; Benveniste 1929, p.23). Herodotos actually mentions that the Iranians (Achaemenids) worshipped winds but not wind. It then means that they worshipped at least two winds or two wind gods. E. Benveniste seems to have identified the winds exclusively as Vayu (Benveniste 1929, p.17). However, it is clear that there were two winds (gods) venerated by the Iranians, as is correctly pointed out by W.Nagel, B.Jacobs and M. L.Carter (Nagel/ Jacobs 1989, p.365, die 'Winde'; Carter 1995, p.132, "winds' (plural)).

Somewhat the same observation is recorded by Strabo (*Geography*, 15, 3, 13, Jones 1966, p.174: Helios, Selene, Aphrodite, fire, earth, *winds* (*anemoi*) and water (my italics, Benveniste 1929, p.51; MacDowall 1978, p.310). Although E.Benveniste supposed that Strabo simply borrowed this observation from his predecessors and maintained that there was no evidence to prove that the customs described by Herodotos still existed in Iran in the time of Strabo, I think that E.Benveniste was mistaken because the fundamental gods of the Kushans tally with those described by Herodotos and Strabo (MacDowall 1978, pp.311–12; Tanabe 1995a). Therefore, the same could hold true of the Iranians under the Parthian dynasty (1–3rd century A.D.).

Whether Strabo borrowed or not, his observation is applicable at least to the religion of the Kushans, that is to say, they worshiped most probably two wind gods. Consequently it is quite natural and reasonable that Kanishka I should adopt both wind gods as his tutelary gods and it is more reasonable to imagine that he ordered the representations of Vayu (OHÞO) as well as of Vata (OAΔO), rather than to surmise that he selected only one of them (Vata=Anemos=Oado). If OHÞO is Vayu, the earliest issues of Kanishka I can therefore be understood to have included another wind god Vayu into his tutelary pantheon which corresponds exactly to the record left by Herodotos and Strabo on the religion of the Iranians.

Furthermore, according to N.S.Nyberg, Vayu seems to have been venerated in "East Iran", i.e., Afghanistan, Central Asia and Gandhara. In the *Rām Yašt*, Vayu is described with two epithets (*apayate* and *vohvarste*) which, according to Nyberg and others, characterize the language of this region (Nyberg

1931, pp.201–22, 219; Widengren 1938, p.229). In this regard, I should mention an expression in the *Videvdāt=Vendīdad*, I, 9, i.e., *vaēkərəta* (created by Vayu) is identified with Gandhara (Gnoli 1967, pp.68–75: 1980, pp.48–57; Panaino 1990, p.7) or the Kabul region (Widengren 1938, pp.211–12). The most important region of the Kushan empire was Gandhara and its surroundings. If Vayu were widely worshipped in these regions, it was quite natural that Wema II Kadphises adopted Vayu exclusively to be depicted as OHÞO on his coinage. It is also plausible to surmize that Kujula-Kadphises, the grandfather of Wema II Kadphises had already adopted Vayu as one of his tutelary gods, for on his bronze coins the Bactrian camel is depicted (Mitchiner 1976b, pp.690–93). If it were so, the Kushan dynastic worship of Vayu would have started from this king. Therefore, we might say that Kanishka I faithfully followed the Kushan dynastic tradition of Vayu-worship.

Now we might be allowed to insist that the Kushans could worship both wind gods Vayu and Vata. The latter is already attested in the image of Anemos=Oado on the coins of Kanishka I and Huvishka (Tanabe 1990: 1991/92). So, we can also say that the former must have been struck on the reverse of the coins. Following this premise and eliminating inappropriate candidates for Vayu one after another from many gods depicted on the Kushan coinage, we can only arrive at the conclusion that the only candidate is the image of OHÞO.

The newly found gold coin (Fig.1) of Kanishka I belongs to the earliest issues of this king and the image of OHÞO is included in his earliest and basic pantheon, together with Anemos=Oado=Vata. The core of this pantheon is most likely to contain two wind gods as is indicated by the records of Herodotos and Strabo. Therefore if OHÞO should be another wind god, i.e.another wind god of the Zoroastrians, he should have been depicted on the earliest issue of Kanishka I's coinage. Consequently, from the Zoroastrian viewpoint, OHÞO must be another Kushan or Iranian wind god, Vayu, not the Hindu god, Shiva.

Concluding remarks

Above I have attempted to investigate the image of OHÞO from a wider viewpoint and arrived again at the same conclusion that Kushan OHÞO is not Shiva but Vayu. However, this identification does not necessarily exclude the influence of Shiva image on that of OHÞO. Probably the erect penis of OHÞO is one of Shiva's influence upon Vayu=OHÞO. This and other kinds of influence if they exist, may be explained as follows: When Wema II Kadphises wanted to depict Vayu as a supreme and high god on the reverse of his coins, but no appropriate image was available in Gandhara. So he borrowed some features and attributes from Shiva whose functions (creator, sustainer and destroyer, god of rain) are to a certain extent similar to those of Vayu (warrior-god) on the one hand, and the others from the images of Heracles and Poseidon. This is the main reason why OHÞO's syncretic feature is more Indian than Iranian, and has almost nothing Iranian in particular as far as his iconography is concerned. In other words, OHÞO is definitively Vayu under the Indian garb of Shiva. Consequently OHÞO might have been confused with Shiva or venerated as such only by the Shaivite sect and by Hindus. However, we should not confuse OHÞO with Shiva, because the obscure clouds concealing OHÞO=Shiva hypothesis have been blown away at last by the "Good Wind".

Lastly those who still obstinately adhere to the old OHÞO=Shiva identification must prove first of all that Shiva could be transformed phonetically into OHÞO because the very name of Shiva is well attested in Kharoshthi inscriptions found in Gandhara, although it is, in my opinion, completely impossible (Tanabe 1991/92, p.57).

Bibliography

Benveniste, E.
1929 *The Persian Religions according to the chief Greek texts*, Paris.
1946 *Vessantara Jātaka*, Paris.

Benveniste, E. / Renou, L.
1934 *Vṛtra et Vṛθragna*, Paris.

Bivar, A.D.H.
1988 "An Iranian Serapis", *Bulletin of the Asia Institute*, vol.2, pp.11–17.

Boyce, M.
1993 "Great Vayu and Greater Varuna", *Bulletin of the Asia Institute*, Vol.7, pp.35–40.

Brunner, Ch.
1978 *Sasanian Stamp Seals in the Metropolitan Museum of Art*, New York.

Carter, M.L.
1995a "A preliminary study of two Indo-Scythian bronzes in the Nitta Group Collection", *South Asian Archaeology 1993*, Helsinki 1995, pp.125–36.
1995b "Aspects of the imagery of Verethragna: the Kushan empire and Buddhist Central Asia", *Proceedings of the Second European Conference of Iranian Studies*, Roma, pp.119–40.

Cribb, J.
1981 "A New Coin of Vima Kadphises, King of the Kushans", *Festschrift for Prof. B. Trell* (ed. by Casson, L./Price, M.), New York, pp.29–37.
1984 "The origin of the Buddha image—the numismatic evidence", *South Asian Archaeology 1981*, pp. 231–44.
1997 "Shiva Images on Kushan and Kushano-Sasanian coins", *Studies in Silk Road Coins and Culture, Papers in honour of Professor Ikuo Hirayama on his 65th birthday* (ed. by Tanabe, K. / Cribb, J. / Wang, H.), London / Kamakura (forthcoming).

Cribb, J. / Errington, E. (ed.)
1992 *The Crossroads of Asia*, Cambridge.

Cribb, J. / Sims-Williams, N.
1995/96 "A New Bactrian Inscription of Kanishka the Great", *Silk Road Art and Archaeology*, Vol.4, pp.75–142.

Darmesteter, J.
1883 *The Zend-Avesta*, part II, Oxford.
1892/93 *Le Zend-Avesta*, Paris.

Gail, A.J.
1992/93 "OHÞO: Bhūtesa—Śiva as Lord of the Demons in the Kuṣāṇa Realm", *Silk Road Art and Archaeology*, Vol.2, pp.43–49.

Gignoux, Ph.
1988 "Le mécanisme de la pluie entre le mythe et l'expérimentation (*Dādestān ī denīg 92*)", *Iranica Antiqua*, vol. XXIII, pp.385–92.

Gnoli, G.
1967 *Richerche storiche sul Sistan antico*, Roma.
1980 *Zoroaster's Time and Homeland*, Napoli.
1988 "Bahram I. In Old and Middle Iranian Texts", *Encyclopaedia Iranica*, vol.III, fasc. 5, pp.510–13.

Godley, A.D. (tr.)
1975 *Herodotus*, The Loeb Classical Library,Vol.I (Books I and II), London.

Göbl, R.
1960 "Zwei Neufunde in der Numismatik der Kuschan", *Mitteilungen der Österreichischen Numismatischen Gesellschaft*, Bd. XI, Nummer 8, pp.94–95.
1976 "The Roman-Kushanian medallion in the British Museum", *Journal of the Numismatic Society of India*, Vol.XXXVIII, pp.21–26, Pl.VII.

1983 "Der veruntreute Himmel:die Götterwelt des Kušānreiches", *Litterae Numismaticae Vindobonenses*, Band 2, pp.79–96.
1984 *System und Chronologie der Münzprägung der Kušānreiches*, Wien.
1993 *Donum Burns. Die Kušānmünzen im Münzkabinett Bern und die Chronologie*, Wien.

Gray, L.H.
1928 *The Foundations of the Iranian Religions*, Journal of the K.R.Cama Oriental Institute, No.15, pp.1–228.

Grenet, F.
1993 "Znanie Yashtov Avesty v Sogde i Baktrii no Dannym Ikonographii", *Vestnik drevnei Istorii*, no.4, pp.149–60.
1994 "The second of three encounters between Zoroastrianism and Hinduism: plastic influences in Bactria and Sogdiana", *James Darmesteter Remembered* (James Darmesteter Memorial Lectures, ed. by G.Lazard/Sardesai, D.R.), Bombay, pp.41–57.

Gupta, S.K.
1983 "Symbol of Fertility", *Elephant in Indian Art and Mythology*, New Delhi, pp.19–24.

Harmatta, J.
1995 "Le syncrétisme dans les religions du royaume kouchan", *Au Carrefour des Religions Mélanges offerts à Philippe Gignoux*, Leuven, pp.151–56.

Hopkins, E.W.
1915 *Epic Mythology*, Strassburg.

Humbach, H.
1975 "Vayu, Śiva und der Spiritus Vivens", *Monumentum H.S.Nyberg*, Vol.1, *Acta Iranica*, 4, pp.397–408.

Jones, H.L.
1966 *The Geography of Strabo*, The Loeb Classical Library, vol.VII, London.

Karttunen, K.
1989 *India in Early Greek Litterature*, Studia Orientalia, No.65, Helsinki, pp.210–13.

Kirfel, W.
1953 "Siva und Dionysos", *Zeitschrift für Ethnologie*, Bd. 78, pp.83–90: *Kleine Schriften*, 1976, Wiesbaden, pp.210–17.

MacDowall, D.W.
1978 "Mithra's Planetary Setting in the Coinage of the Great Kushans", *Études Mithriaques*, *Acta Iranica*, Vol. 17, pp.305–15.

Majumdar, M.R.
1943 "Iconography of Vayu and Vayu-worship in Gujarat", *Journal of the Indian Society of Oriental Art*, Vol.11, pp.108–14.

Mallmann, M.Th.
1963 *Les enseignements iconographiques de l'Agni Purāṇa*, Paris.

Marshak, B.I.
1995/96 "On the Iconography of Ossuaries from Biya-Naiman", *Silk Road Art and Archaeology*, Vol.4, pp.171–93.

Mitchiner, M.
1976a *The Dynasty of Azes*, Indo-Greek and Indo-Scythian Coinage, vol.6, London.
1976b *The Indo-Parthians*, Indo-Greek and Indo-Scythian Coinage, Vol.8, London.
1978 *The Ancient & Classical World 600 B.C.-A.D.650*. London.

Mode, M.
1992 "Zum sogdischen Mahādeva", *Archaeologische Mitteilungen aus Iran*, Bd.25, pp.329–31.

lo Mucio, C.
1995/96 "OHÞO: a Sovereign God", *Silk Road Art and Archaeology*, Vol.4, pp. 35–48.

Nagel, W. / Jacobs, B.
1989 "Königsgötter und Sonnengottheit bei altiranischen Dynastien", *Iranica Antiqua*, Vol.XXIV, pp.337–89.

Nyberg, N.S.
1931 "Questions de cosmogonie et cosmologie mazdéennes, II Analyse de données", *Journal Asiatique*, t. ccxix, pp.193–43.

Panaino, A.
1990 *Vendīdad*, Milano.
1995 *Tištrya*, part II, Roma.

Pugachenkova, G.A.
1977 "Gerakl v Baktrii", *Vestnik drevnei istorii*, 1977, no.2, pp.75–92.
1989 "Obrazy bojestv v skul'pture Tokharistana vremeni Kushan", *Kraevedenie Surkhandar' i*, ed. by E.V. Rtveladze, Tashkent, pp.20–42.

Raff, Th.
1978 "Die Ikonographie der mittelalterlichen Windpersonifikation", *Aachener Kunstblätter*, Vol.48, pp.71–218.

Rosenfield, J.M.
1967 *The Dynastic Arts of the Kushans*, Berkeley/Los Angeles.

Sahai, Bh.
1975 *Iconography of Minor Hindu and Buddhist Deities*, New Delhi.

Schafer, E.H.
1950 "The Camel in China down to the Mongol Dynasty", *Sinologica*, vol.2, pp.165–94, 263–90.

von Shroeder, L.
1914 *Herakles und Indra*, Wien.

Snesarev, G.P.
1969 *Relikty domusulimanskikh verovanii i obryadov u Uzbekov Khorezma*, Moscow.

Srinivasan, D.M.
1984 "Significance and Scope of Pre-Kushana Śaivite Iconography", *Discourses on Śiva*, ed.by M.W. Meister, Bombay, pp.32–46.

Tanabe, K.
1990 "The Kushan Representation of ANEMOS/OADO and its relevance to the Central Asian and Far Eastern Wind Gods", *Silk Road Art and Archaeology*, vol,1, pp.51–80.
1991/92 "OHÞO: Another Kushan Wind god", *Silk Road Art and Archaeology*, Vol.2, pp.51–71.
1995a "Earliest aspect of Kanishka I's religious ideology. A numismatic approach", *In the Land of the Gryphons, Papers on Central Asian Archaeology in antiquity*, ed. by A.Invernizzi, Firenze. pp.203–15.
1995b "A Kushan wind god Anemos=Oado and the emergence of wind-bag of the wind god in oriental art", *Bunmeigakugairon*, Papers in honour of Prof. Namio Egami on the 88th Birthday, Tokyo. in Japanese, pp.235–66.
1995/96 "Vishvakarman in Gandharan Art:Another Anthropomorphic Image of the God Identified", *Silk Road Art and Archaeology*, Vol.4, pp.49–74.

Widengren, G.
1938 *Hochgottglaube im alten Iran*, Uppsala/Leipzig.
1961 *Iranische Geisteswelt von den Anfängen bis zum Islam*, Baden-Baden.
1968 *Les Religions de L'Iran*, Paris.

Wikander, S.
1941 *Vayu, Texte und Untersuchungen zur indo-iranischen Religiongeschichte*, Teil I, Uppsala/Leipzig.

Wolff, F.
1910 *Avesta, die heiligen Bücher der Parsen*, Strassburg.

Yamada, M.
1971 "Kushana-kahei no Shiva-zohwa hatashite Shivaka", *Seinanajiakenkyu*, Vol. 22, pp.37–50 (in Japanese).
1983 "Chuouajia to Ishvara", *Tenbou-ajiano-koukogaku*, Tokyo, pp.589–97 (in Japanese).

Zeimal', E.
1990 "Braslety iz khotana", *Soobschchenia Gosudarstvennogo Ermitaja*, Vol.54, pp.34–38.

PSEUDOPERIPTERAL TEMPLES IN LATE-ANTIQUITY MESOPOTAMIA —A NOTE ON THE LAST STAGE OF THE BABYLONIAN TRADITION IN ARCHITECTURE—

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According to the twenty-years' study on at-Tar textiles which has untiringly been conducted and organized by Professor Fujii, it would be in the time range roughly from the second to third century A.D. that the caves were used for human burials [Fujii and Sakamoto 1994: 75], when the drawn-out conflict between the Parthians from the east and the Romans from the west spread out mainly in the western fringe of the Mesopotamian plain. At that time, while the plain may have been politically unstable, construction activities seem to have enjoyed rather unrestricted circumstances. For, whereas the conventional planning scheme can be perceived in a number of religious buildings, such as the Assyrian fashion in those at Hatra and the Babylonian tradition at Dura Europos [Downey 1987: 47], a traditional context was forced, perhaps for the first time since the Babilonian style had been settled there at latest in the beginning of the second millennium B.C., to be broken down by the introduction of novel structural elements to monumental buildings, of which most notable are the iwan and the colonnade. The iwan is a large hall with one end widely open, usually roofed with a barrel vault. Needless to say, it contributed greatly to the invention of certain styles for a new age, such as the Sasanian palace, and later the Muslim architecture. On the other hand, still disputable is how the colonnade, a row of columns arranged in a certain order, made a contribution toward the immediately later architecture. In Mesopotamia, archaeology has ever attested it in some palatial buildings with a peristyle court, at Nippur and Assur, and in some temples with a columned porch in front at Hatra and Dura-Europos, and most impressive are the examples of the peripteral, or pseudoperipteral in fact, temple style.

As far as we know from Mesopotamia, there are three examples of the pseudoperipteral temple, of which the 'Peripteros' from Assur and the temple of Gareus at Uruk are well-known since they have often quoted as evidence for the Parthian temple. The last one from Hatra, labelled Building E but usually called the Hellenistic temple, has scarcely been discussed in architecture, other than in deities, since the full report was published in Arabic [Safar and Mustafa 1974]. It is wondered that the excellent drawings of details in the report have perhaps never introduced in any other publications. Thus, this paper aims at exemplifing briefly how the Parthian religious architecture became diversified through the introduction of the peripteral temple style and its incorporation into the Babylonian tradition.

The habitation at Hatra is said to have been originated in the Assyrian time, and to have later acquired autonomy and fortified the city with some religious installations in the middle of the 1st century B.C., then in the 1st century A.D., according to Aramaic texts, it seems to have become a capital of a local Arab kingdom, which functioned undoubtedly as an important caravan station under the Parthian rule [Safar 1951: 4–6]. In the center of the city is a fortified temenos covering a rectangle of 440 m by 320 m in plan, consisting of a temple enclosuer in the west and a forecourt in the east, separated and at the same time connected each other by a partition wall with several monumental gates. The so-called Great Temple is situated in the center of the temple enclosure, with a couple of typical facades of triple-iwan construction open to the east. The southern iwan is assigned to the god "MRN", usually read Maran, the chief of the triad of Hatra [Salihi 1975: 75], associated behind by a square temple which has

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ever been considered to be dedicated to the sun god Shamash, and in front by a gate in the partition wall. The Temple E, with an appearance of the Hellenistic peripteral style, is located somewhat northerly in front of the gate, facing the east. The mark E was given by the German mission directed by W. Andrae in the beginning of this century [Andrae 1912: Taf. III], but it is not until 1950s that the original structure, as well as a hoard of sculptures, was brought to light by the Iraqi team [Safar and Mustafa 1974: 344–7]. Although the peripteral design of the temple comes no doubt from the west, the deity here is convincingly explained as the son of Maran mentioned above, named "BRMRYN", identifiable with the Babylonian moon god Sin [Salihi 1975: 75–80]. There seems to be little literary clue to date the foundation of the temple, but western fashion in the Roman time is emphasized in spite of the indigenious character of the deity [Colledge 1977: 46].

The building was reconstructed entirely in ashlar masonry, except for the roofing, as it were where it had been, by use of old and new building materials. It had been planned basically in a dipteral style, but different from the western examples, following details should be noted (Fig. 1):

1) The naos, or cella, consists only of one simple room with the outer frontage of 6.9 m and the depth of 9.8 m, a common doorway opening in the eastern front, quite different from a type of the megaron.

2) On the stylobate, 10.5 m by 15.2 m, erected are columns only of the inner colonnade, the outer columns being erected on the ground level pavement of stone slabs.

3) The area of the outer peristyle covers 16.3 m in the width by 20.0 m in the length (measuring on centers, 15.0 m by 18.7 m); the ratio of the width to the length, nearly 8.1/10, is considerably large to compare it with those of ordinary Greek temples.

4) There is no structural relation making rigid frames, i.e. Rahmen, between the outer and inner colonnades, because each bay of the former, measuring about 2.39 m on centers, is quite different in span from the latter bay, about 1.84 m.

5) The diameter of the outer columns, tapering from bottom, 0.9 m, to top, 0.7 m approximately, fairly exceeds that of the inner ones, about 0.6 m at the bottom.

6) The outer columns are surmounted with decorative capitals known as the composite order, the entablature being fully ornamented with variety of sculptures against every course down from the architrave up to the cornice, while the inner ones are surmounted simply with Ionic volutes.

7) In the reconstructed facade, if it is enough reliable, most notable and sophisticated must be the front, surmounted with a tympanum spanned over the width of the stylobate and scooped out in the shape of arch in the lower center, showing a tripartite design by omitting three of the outer columns in front and instead by installing the wide stairs there to approach up to the cella.

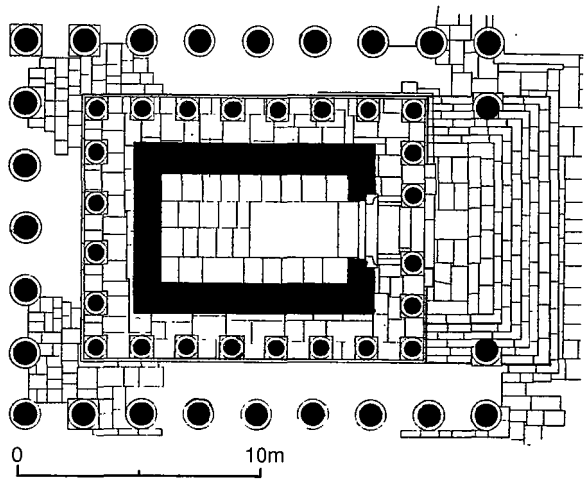

Fig. 1 Temple E at Hatra [Safar and Mustafa 1974: Fig. 8].

Thus, however it may looks a Greek fashion at a glance, the concept of temple construction must have been arisen in greater part from a certain local tradition, including the Mesopotamian tripartite scheme for the front elevation of a temple. Even the simple rectangular cella lacking a cult niche in the rear wall, which may seem to have no parallel in the vicinity, is considered with most probability to derive from cellae of other small temples at Hatra, once discussed in relation with an Assyrian sanctuary form [Downey 1987: 47–8].

Ever since the Sumerian civilization, Uruk had almost without a break occupied the seat of leadership in the south. Immediately after the fall of Babylon under the Persian aggression, the city is said to have once declined in prosperity. However, in the 1st century B.C. it revived in the context of the Parthian strategy, when a temenos, or a sacred enclosure, of 60 m by 63 m, surrounded by the "peribolos", was newly constructed with mud-bricks. Axially in the center of the temenos was erected a little shrine built of baked bricks and ornamented with stucco, into which a mud-brick building as a forerunner had been converted, according to the excavator [Heirich 1935: 33–6] (Fig. 2). Excavations in 1930s brought about the discovery of literary evidence for the temple of Gareus. It is a limestone plate with an inscription dated the year of 110 A.D. mentioning the name of the god unfamiliar so far. The dedicator is regarded as a group of newcomers perhaps concerned in commercial activities [Meier 1960: 114]. The followings are to be noted:

1) The plan of the central shrine measures 10.5 m in the frontage and 13.7 m in the depth; the ratio of the frontage to the depth is about 7.7/10.

2) The interior space is divided in plan by a pair of modest projections into two transverse rooms, of which the deepest one with a cult niche is formed approximately in square plan different from the conventional Babylonian fashion.

3) Each side of the exterior is accentuated by four half or three quarter columns probably with arched bays in between supported by rectangular pilasters associated with the engaged columns.

4) Parallel to the shrine front, there remained a row of six column bases each in the square plan with a hight of at least twenty-five courses of bricks; curiously enough, on the other three sides, no trace of columns can be found.

5) There remained some vestiges of the fluting and Ionic capital of columns, as well as terra-cotta fragments of the entablature and parapet.

Whether the front columns might have functioned simply as a boundary separating a sanctuary court from a forecourt [Schmidt 1978: 34–7], the combination of the above-mentioned engaged columns and six frontal columns reminds us strong enough of Roman pseudoperipteral temples such as Maison

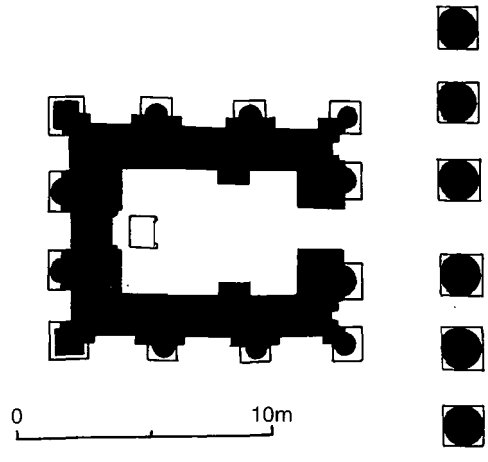

Fig. 2 Temple of Gareus at Uruk [Schmidt 1978: Taf. 41].

Carree and Fortuna Virilis. Thus, though the interior may represent a vestige of Babylonian fashion, the design as a whole gives a impression of a novel concept introduced from the west.

In Parthian Assur the main temple of the God Assur was shifted to the northern spot of the temenos and rebuilt in the form of the triple iwan just like the Great Temple at Hatra. To the southwest of the temenos, adjacent to the old ziggurat, a new sacred court was installed, enclosed partly by colonnade, where an iwan-type temple, named "Freitreppenbau", was erected in the west, and in the north was a kind of a peripteral building, called "Peripteros" by the German mission, facing south. The latter must have been a temple, to judge from religious materials unearthed in front of it [Andrae 1977: 257–60]. In contrast to the examples above, both of which were reconstructed where once they had been, archaeological evidence for "Peripteros" at Assur is only the record of excavations conducted by R. Koldewey in 1919, who made a simple drawing with necessary measurements utilizing the German "elle" as the unit, which can roughly be equivalent to about fifty centimeters [Andrae 1933: 66] (Fig. 3). Following Andrae's deduction, Koldewey's measurements gives a 20.5 m frontage and a 28.0 m depth to the plan of "Peripteros". Despite the designation the building has colonnades on three sides, the front being easily reconstructed as the iwan facade. Just behind the central iwan is a double-cella sanctuary in the Babylonian fashion.

Most noteworthy here is the fact that three different traditions of architecture, if the iwan can be recognized as the Parthian character, encountered together in one and the same building, as Andrae interpreted this building [Andrae 1977: 258]. This could be the unique concept of architecture in the Parthian Mesopotamia.

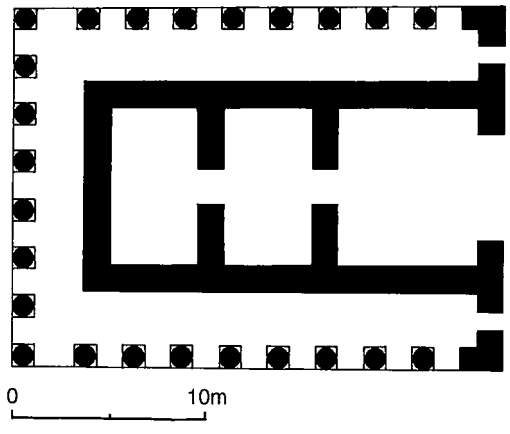

Fig. 3 "Peripteros" at Assur [Andrae and Lenzen 1933: Abb. 36].

So many years have passed since O. Reuther once discussed on Parthian religious architecture in Mesopotamia. He concluded tentatively that there seemed "to have been at least four variants" [Reuther 1938: 435–9]:

1) "the old Babylonian form"
2) "an iwan structure, with or without a Hellenistic prostas"
3) "an iwan used as the pronaos of a naos with several rooms, with a Greek peristasis"
4) "a type in which the characteristic feature as a square cella with an encircling corridor".

In his discussion above, two of the peripteral examples from Uruk and Assur had already been included. He regarded the Gareus temple perhaps as the first category, the Babylonian form, together with another well-known example, Temple A at Assur, while he identified "Peripteros" as the third. The example from Hatra was not revealed at that time. If we accepted such a classification as above, which

category it would fall under? No one would find the answer, in my view, unless such a new category as the Hellenistic or western origine form were added as the fifth. In this case, the Gareus temple could not remain under the first, because of its Roman design fairly different from the indigenous Babylonian, not Assyrian, form of Temple A.

Later, M. Colledge noted, of course, the Babylonian tradition in his admirable work [Colledge 1977: 36–7, 78–9], but his attention seems to be too partial to the "broad room" variety and to be scarcely paid to the discrimination between the Babylonian sancuary and the Assyrian, the latter of which is characterized with the deepest cella of longitudinal room, or "lange raum", though often associated with a "broad room" antecella. S. Downey also paid attention to the Babylonian temple architecture, and considers the following factors to be the Babylonian scheme: 1) a main court, at the rear of which lies the antecella-cella group; 2) difference between the axis of an outer gate and that of a cella-antecella complex; 3) symmetrical arrangement of subsidiary rooms aroubd a court [Downey 1988: 38–42]. In my view, the axial difference can perhaps be less essential than the axis and symmetry around a main courtyard, because a number of Babylonian temples acqired an entire axis and symmetry, such as Marduk Temple at Babylon, Khursagkalamma Temple at Kish, and much erlier examples in the Diyala valley. Thus, what is the Babylonian tradition is still unavoidale question in the late-antiquity Mesopotamia.

Bibliography

Andrae, Walter
1912 *Hatra, II.Teil, Einzelbeschreibung der Ruinen* (WVDOG 9), Leipzig.
1938/77 *Das wiedererstandene Assur*, Leipzig/Munchen.

Andrae, W. and Lenzen, H.
1933 *Die Partherstadt Assur* (WVDOG 57), Leipzig.

Downey, Susan B.
1987 Regional Variation in Parthian Religious Architecture, *Mesopotamia* 22, 29–55.
1988 *Mesopotamian Religious Architecture, Alexander through Parthians*, Princeton.

Fujii, H. and Sakamoto, K.
1994 The Close Relationship between Hatra Sculpture Designs and At-Tar Textile Designs, *al-Rāfidān* 15, 73–76.

Heinrich, Ernst
1935 *UVB* 6.

Meier, Christian
1960 Ein Griechisches Ehrendekret vom Gareustempel in Uruk, *BaM* 1, 104–114.

Reuther, Oscar
1938 Parthian Architecture (tr. by P. Ackerman), in *Survey of Persian Art*.

Safar, Fuad
1950 Hatra and the First Season of Excavation, 1961, Part I, *Sumer* 8, 3–16.

Safar, F. and Mustafa, M.A.
1974 *Hatra, the City of the Sun God*, Baghdad.

Salihi, Wathiq al-
1975 New Light on the Identity of the Triad of Hatra, *Sumer* 31, 75–80.

Schmidt, J.
1978 Parthische Ruinen im Gebiet des Gareus-Tempels, *UVB* 28, 30–39.

COTTON IN ROMAN EGYPT: SOME PROBLEMS OF ORIGIN

John-Peter WILD*

The caves of At-Tar on the western scarp of the Kerbala Plateau, a short distance east of the Euphrates, presented Professor Hideo Fujii with an exceptional archaeological challenge. The At-Tar monographs (Fujii 1976; Fujii 1980) and subsequent articles in *Al-Rāfidān* are testimony to his ability to rise to the occasion. The caves contained inhumation burials, broadly of late Hellenistic and early Roman date, furnished with some very well preserved textiles and matting in a wide range of decorative techniques. Research at the site and in the laboratory has enabled Professor Fujii, Mrs Kazuko Sakamoto and their colleagues to demonstrate the pivotal position of the textile assemblage in the study of the technological relationships between the Mediterranean and Western and Central Asia in antiquity (Fujii 1980: 44–76, fig.I-54, table I-6).

In tribute to Professor Fujii this paper sets out to explore some East-West textile problems that turn on the place of cotton in Roman Egypt and the Red Sea trade (Fig. 1). The starting point for the enquiry is the port of Berenike on the Red Sea coast of Egypt, an important staging post in Rome's trade with South Arabia and India (Meredith 1957; Sidebotham 1991). Founded by Ptolemy II Philadelphus in 275 BC (Strabo, XVII.1.45; Pliny, *Naturalis Historia* VI.23.103), it was at the height of its commercial success in the early imperial period when it was well known to the anonymous shipper and author of the *Periplus Maris Erythraei* (Casson 1989: 94–7, 143–4; *Periplus ME* 1–2). Although the Roman government maintained a strategic road link from Berenike to Coptos in the Nile Valley (Raschke 1978: 648; Sidebotham, Zitterkopf 1995), by land the site had much attenuated lines of communication and its resident community must have been extremely sensitive to any fluctuations in the economic climate, not to mention local security. Nonetheless, recent fieldwork and excavation at Berenike by S.E.Sidebotham and W.Z.Wendrich (Sidebotham, Wendrich 1995) has demonstrated that the town still had a thriving population until about AD 500.

The first two seasons of excavation (1994, 1995) have yielded over 400 textile fragments, most of them from the midden deposits that accumulated during the fourth-fifth century occupation (van Waveren 1995; Wild, Wild 1996). Approximately 48% of the rags could be identified under the microscope as being of cotton - an unexpectedly high proportion for a Roman-period site.

The cottons themselves could be separated into two groups. The first, amounting to just under half of the collection, was woven in 1/1 plain tabby exclusively from Z-spun (clockwise-spun) yarns - termed Z/Z below. (For explanation of ancient textile technology see Wild 1970; Wild 1988.) Most had no special features and were of medium to fine quality. A number carried an overall check pattern, alternating stripes of blue-dyed with undyed yarn in both warp and weft. Some had self-bands, bundles of weft forming prominent ribs at intervals down the cloth, and at least one showed remains of a cut pile. One piece, perhaps two, carried a narrow tapestry band from which most of the dyed wool had disintegrated. Most striking of all were scraps of at least two resist-dyed cottons, decorated with floral patterns (van Waveren, Wendrich 1995: 66 pl.32). The latter were achieved by painting the design on the cloth with a resist medium such as wax and then dyeing it blue, presumably with indigotin derived either from woad or indigo.

The second group was woven from S-spun yarns (S/S) and there were a few basket weaves (paired warp and weft) and half-basket weaves (paired warp *or* weft) among the simple tabbies. Again, most

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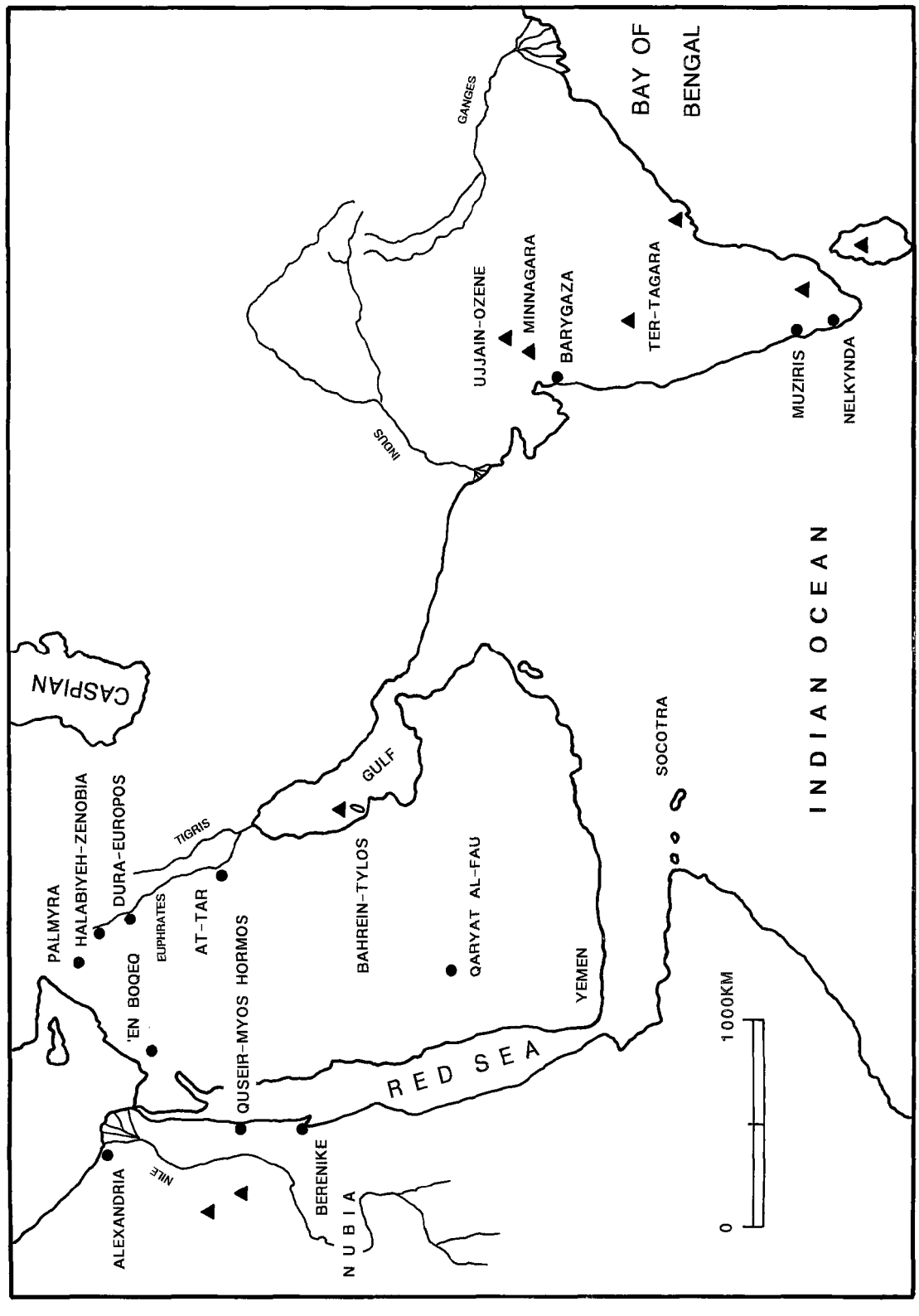

Fig. 1 Key findspots and production centres of cotton in the Roman Empire and beyond. (Filled triangles denote attested centres of cotton growing.)

fabrics were of medium quality or better; there were a few checks and self-bands, and one instance of looped pile decoration.

Spin direction was the most obvious, but not the only, distinguishing factor. The Z/Z cottons had medium to hard spun yarns whilst those of the S/S fabrics were sometimes so over-spun as to give a crêpe-like effect. The Z/Z cottons by and large were well preserved, whilst the S/S cottons had a soapy feel and had begun to deteriorate.

It is difficult to avoid the conclusion that these two groups of cotton textiles reached Berenike from different sources. The problem lies in identifying those sources. The contrasting spin-directions of the yarns give the first hint; for Ptolemaic and Roman spinners in the Nile Valley preferred to twist textile fibres in an anticlockwise (S) direction (Bergman 1975: 13; Mayer Thurman, Williams 1979: 38) and the same holds good for Roman Syria and Mesopotamia. Where Z-spun yarn is used, it tends to be in some specialised context (Wild 1994: 14–15) or (outside Egypt) employed as weft, as at At-Tar (Ogawa, Naruse 1976: 120–201). While it would be logical, therefore, to look to the Nile Valley for the origin of the S/S spun cottons at Berenike, one would have to cast the net wider to discover the provenance of the Z/Z spun group.

There is mounting evidence in the documentary and papyrological record for the wearing of cotton clothing and, more significant, the cultivation of cotton in Egypt. The ambiguity of the Greek and Latin terms for fine cloth of vegetable origin, especially βύσσος/*byssus* and κάρπασος/*carbasus* (Isidore, *Orig.* XIX,27; Pollux VII,76; Pausanias VI,26,6; V,5,2; *Periplus ME* 41; Curtius Rufus VIII,9; Wipszycka 1965: 40) is frustrating, but where the word ἐριόξυλον, 'wool from wood', appears as a substantive or adjective, there is little room for doubt. Pliny (*Naturalis Historia* XIX,1(3)) describes the cotton plant (which he calls *gossypion*), its boll and 'cotton wool', and states that it grows on the Arabian side of Upper Egypt. Pollux (VI,75), writing somewhat later under the Antonines, comments on the 'cotton tree', its fruit and the characteristics of cotton cloth, but does not pin-point its cultivation within Egypt precisely.

Local documents are more specific. Farmers near Kysis in the Kharga Oasis were raising cotton as a crop in the second century (*P. Iand.* VII, 142, II, 8) and still investing in it in the fourth (*O. Douch* 51). It also figures in a fourth-century farming account from Ismant al-Kharab (Kellis) in the Dakhla Oasis (Jenkins, Wagner, forthcoming; Wagner 1987: 291–3).

More numerous are the references to cotton shirts and even outer garments. Letters sent to Oxyrhynchus and Karanis in the second century (Winter, Youtie 1944) mention respectively a cotton shirt (*P. Ox.* LIX,3991) and 'cottons' (*P. Mich.* VIII,500,7). Unprovenanced papyri describe the search for a cotton shirt (*SB* VI,9025) and cotton outer garments for working in the fields (*SB* VI,9026) and another (*P. Lond.* III,928) lists cotton yarn (?). Pollux (VII,75) speaks of cloth with cotton weft and linen warp, and at least one of the papyri seems to echo him (*SB* VI,9026). Such union fabrics are rare among Roman finds (Sheffer, Tidhar 1991: 22), but became very popular in the Middle Ages as fustian (Lamm 1937; Watson 1983: 39, 165).

On the Upper Nile, south of the Dodecaschoenos, Pliny notes that cotton 'trees' were grown in 'Aethiopia' (*NH* XIII,90). Finds of cotton seeds and lint dating to the early third millennium BC at Afia in Lower Nubia may attest an early stage in the evolution from a wild to a cultivated plant and suggest that cotton was an old established crop in that region (Chowdhury, Buth 1971). (The botanical definition and distribution of the varieties of cotton known in antiquity is debatable and need not concern us here (Watson 1977).) For the Roman period Pliny's statement is supported by regular finds of cotton textiles on archaeological sites in Nubia. Grace Crowfoot and F.L.Griffiths in a classic paper (1934) drew attention to cotton cloth discovered at Karanog and Meroë, and recent rescue excavations at Qasr Ibr īm (Crowfoot 1977: 46; 1979) and at a string of cemeteries further upstream (Mayer Thurman, Williams 1979: 37; Bergman 1975: 13) strengthen the impression that locally grown cotton was commonly worn (*pace* Gervers 1990: 13–16). Miss E.C.Crowfoot (pers. comm.) has described the character of

the cottons in almost exactly the same terms that we used for the S/S cottons at Berenike. S-spin, moreover, is the rule on the Upper Nile, and the occasional Z-spin cottons in the tombs mostly date to after the Arab conquest (Bergman 1975: 13).

It would be tempting to propose without further ado that the Berenike S/S cottons are of Nubian origin; pottery was being brought to Berenike in late antiquity from the Aswan area (Hayes 1995), and textiles could be regarded as an attractive parasitic cargo. Gervers (1990: 14) has argued that the heyday of cotton in Lower Nubia fell in the century and a half before the collapse of a strong Meroitic authority in the region *c.*AD 330-350 and drawn attention to the popularity of camel-hair fabrics at some sites thereafter. The situation is not clear-cut, however; for animal-hair fabrics are unlikely to have replaced cottons functionally. Nonetheless, the apparent decline of cotton-wearing - if not cotton growing - in Lower Nubia at just the time when Berenike might have been drawing on this area is a difficulty. The evidence for cotton as a crop in the oases, however, cited above, is more reliable. Whether the inhabitants of Berenike obtained their S/S cottons from there or from Nubia or from a source so far unrecognised is less important to establish than it is to admit the very strong probability that these fabrics were manufactured somewhere in the Nile Valley and not overseas.

Greater obscurity attaches to the source of the Z/Z cottons at Berenike. Cotton forms a very small proportion of the textile assemblages from sites within the Roman province of Egypt and Z/Z cottons are rarer still. Research on the unpublished fourth- and fifth-century textiles from Karanis in the Fayum has identified no Roman cottons so far (J. Batcheller, pers.comm.) and Wilson in her selection (1933: 50 no. 133) notes only a skein of red cotton yarn. There is a single find of plain Z/Z cotton tabby from Akoris in Middle Egypt (Kawanishi, Tatsuno 1995, 279), but it may not be securely stratified: after the Arab conquest Z/Z cottons are a familiar textile type (Brookner 1979; Pfister 1937a). Excavation at Abu Sha'ar (Bender Jørgensen, Vogelsang-Eastwood 1991: 3) yielded one Z/Z cotton, resist-dyed (see below). At Quseir al-Qadim, however, there are at least 13 Z/Z cottons from closed Roman contexts (Eastwood 1982: 302–304 nos 5, 22–23, 29–33, 35, 50–51, 150, 206) - a small percentage of the total corpus, but significant nevertheless. Quseir has now been convincingly identified as the Myos Hormos of the Graeco-Roman handbooks (Peacock 1993; Bülow-Jacobsen, Cuvigny, Fournet 1994), the second main Roman entrepot on the Red Sea coast; it may be more than coincidence that the findspots of both groups of Z/Z cottons are seaports engaged in the Red Sea trade.

Outside Egypt cotton turns up in the textile record of several sites in the Roman provinces of Arabia, Judaea and Syria, and just beyond the borders in Partho-Persian Mesopotamia; but its character varies greatly from place to place. The earliest find, with a *terminus ante quem* of the mid first century AD, is a piece of cotton netting from the 'tomb of Jason' in Jerusalem (Rahmani 1967: 93–4, pl.24A), which seems to comprise cords Z-plied from (possibly) S-spun yarn. Most cottons from Judaea/ Palaestina, however, are late Roman: Nessana yielded three Z/Z and two S/S fabrics (Bellinger 1962: 92) and 'En Boqeq 14 plain S/S fragments and 3 union fabrics (8% of the assemblage) (Sheffer, Tidhar 1991: 22–23). A curious series of lepper burials (*c.*AD 800) at the monastery of John the Baptist near Jericho (Kasr al-Yahud) were wrapped in linen (75%) and cotton (25%) shrouds; but only 10 of the 60 cottons were Z/Z, the rest being either S/S or S/Z (Shamir, pers.comm.).

The tombs of the mercantile aristocracy at Palmyra, who enjoyed long-distance trading connections with the Indian Ocean before the city's fall in AD 273, contained surprisingly few cottons - just 3% (mostly Z/Z) on a recent count (Stauffer 1995: 59–60, Abb.100, 101). Pfister himself, however, who published most of them (Pfister 1937b: 15–16, 19–22; 1940: 11, 18–19), was sceptical of the Roman date of several pieces, perhaps unnecessarily. At Halabiyeh-Zenobia on the upper Euphrates (*TAQ* AD 610) coarse Z-spun cotton, blue and apparently hank-dyed, was frequently incorporated into tapestry-woven ornament; there is only one plain fabric, a tunic, and that is S/S spun (Pfister 1951: 55 and *passim*; Nockert 1988: 92–3). Further downstream at Dura-Europos (*TAQ* AD 256/7) the one example of cotton is recorded as S-spun weft in a wool textile (Pfister, Bellinger 1945: 52–3 no.262A). The

At-Tar burial caves closer to the mouth of the Euphrates contained more cotton fabrics (Fujii 1976, 130 Table IV-1; 1980, 181–198); at least 19 were Z/Z, 5 S/S and 8 S/Z, but they were greatly outnumbered by wool, linen and hair cloth fragments.

In sum: the intersite variability, coupled with the statistically small percentage of cotton fabrics and yarns in the textile corpora outside Egypt, distracts rather than helps the search for the origin of the Berenike Z/Z cottons. The regional liking for cloth with S-spun warp and Z-spun weft, evidenced at At-Tar in wool as well as cotton and possibly echoed in Judaea, indicates, if such fabrics were locally woven, that a trade in cotton yarn needs to be considered: this is borne out by the poorly dyed cotton weft employed at Halabiyeh. Spin direction alone therefore is not the sole key to this question of provenance. Before examining other criteria, however, it may be useful to review the areas in which cotton cultivation is attested in antiquity.

North-West India, Watson has cogently argued (1983: 31–32, map 3), was the principal home of Old World cotton. Prehistoric finds leave no doubt that it was an established crop there by the late third millennium BC (Kajale 1991; Betts et al. 1994: 496–7). Herodotus (III, 106; VII,65,1) in the fifth century BC and Theophrastus (*Historia Plantarum* IV,4,8) in the late fourth describe the fruit and cotton wool explicitly. Sennacherib's unsuccessful horticultural experiment with cotton at Nineveh during the early seventh century BC is arguably the first sign of the plant's diffusion westwards (Betts et al 1994: 497). By the fourth century BC cotton was also being cultivated successfully on Bahrein (Tylos) and 'in Arabia' (Theophrastus, *HP* IV, 7, 7–8; *pace* Calvet 1984: 344). Whether Pliny's comments about Bahreini cotton in the first century AD (*NH* XII, 10–12 (21–22)) add anything new is not apparent. In the late sixth century AD Gregory of Tours (*Liber in Gloria Martyrum* 17) speaks with convincing circumstantial detail of cotton growing near Jericho.

Commentators in the past, such as Pfister, assumed that all Roman cotton was an import from India, and it is hard to deny on the evidence of the *Periplus* that India was a major source. The author of that handbook frequently mentions the cotton cloth which could be obtained at the port of Barygaza (Broach) on the Gulf of Cambay. Barygaza served as the outlet for cottons from some far-flung regions of the hinterland - from Minnagara (possibly Baroda) (*Periplus Maris Erythraei* 41), from Ozene (Ujjain) some 200 miles north-east of Barygaza (*Periplus* 48) and from Tagara (?Ter) 300 miles to the south-east (*Periplus* 51). The term the writer uses for the fibre (κάρπασος) can in the context hardly mean anything except cotton (Gopal 1961: 61; Ernout, Meillet 1967: 99). From κάρπασος were made webs of cloth (ὀθόνια, σινδόνες) specified as 'ordinary'. If σινδόνες refer to cotton sheets (*pace* Casson 1989: 292–3), then Argalu (Argaru) at Trichinopoly near the southern tip of India (*Periplus* 59), the island of Sri Lanka (*Periplus* 61) and Masalia (Masulipatam) on the east coast (*Periplus* 62; Casson 1989: 232) were also cotton-producers. Casson (1989: 16) thinks that their wares were picked up by Roman shippers at one of the south-western ports such as Muziris (Cranganore) or Nelkynda (Pirakkād). The peppercorns found at Berenike in 1995 must also be South Indian.

Several of the Indo-Greek textile terms quoted by the author of the *Periplus* (*monache, sagmatogene, molochina*) are obscure, and there is no certainty that they refer to categories of cotton, although Casson has argued for that (1989: 249,251). Whatever they may have meant, the cotton goods carried by Red Sea traders were evidently plain, undecorated, webs of cloth. Their character thus contrasts with that of traded textiles in the Mediterranean where transactions were almost entirely in recognisable garments or items of furnishing, in a finished or semi-finished state (*Edictum Diocletiani* XIX, XXVI).

A remarkable echo of the Periplus is to be found in *P. Vindob. G.* 40.822, a papyrus of the mid second century AD bought on the Egyptian antiquities market (Harrauer, Sijpesteijn 1985; Thür 1987; Casson 1990; Sidebotham 1991: 30–31). The verso lists the contents of a cargo of luxury goods - boxes of Gangetic nard, ivory tusks and sheets of cotton cloth - that on the strength of a loan raised at Muziris in India had been purchased and shipped to Egypt. The recto details an agreement for their safe transport by camel from the port of entry on the Red Sea coast overland to Coptos and thence down

the Nile to Alexandria.

The consignment of cotton is in the form of 54 σχίδοι, provisionally taken as 'sheets' (Harrauer, Sijpesteijn 1985: 148–9; Hesychius, s.v. σχίδα, σχίδος, σχίδια), each weighing about 23.16 Roman lbs or 7582g (*P. Vindob. G.* 40.822, col.2,16–25; Casson 1990: 198–199). Extrapolating from a formula of $1m^2 = 182g$, based on a modern medium-weight cotton bed sheet, each σχίδος would measure about $41.6m^2$. If a loom width of over 2m were supposed, the warp length on this showing would be 20.8m. While it would be unwise to claim that this is an impossible length on (say) a ground loom (Picton, Mack 1989: 46), it seems implausible. Accordingly, one is driven to conclude that the σχιδοι were not single webs of cloth like the *chartae singulae*, 'single sheets' of linen, sold as sailcloth in the time of Diocletian's Edict (Erim, Reynolds 1970, 130–1; *Edictum Diocletiani* XXVI, 264; Giacchero 1974, 202), but individual sheets parcelled up together for convenience.

The papyrus states that the Arabarchs at the port of entry had already claimed in custom's dues cloth weighing 22.75 minas (11755g), almost 3% of the consignment of textiles (Casson 1989: 199; Sidebotham 1986: 102–105). One must assume therefore that Indian cotton was off-loaded - and possibly subsequently sold - at either Berenike or Myos Hormos, the two main entrepots. One cannot unfortunately decide in favour of the one or the other; for it is not certain that the commercial life of Quseir-Myos Hormos, known to be short, was over by the mid second century, the date at which the agreement was drawn up (Bagnall 1986: 4; D. Whitcomb, pers.comm.). Nevertheless there is a more than even chance that Berenike was the tax point and that Indian cotton is somewhere among the site's textiles.

At first sight this line of argument appears to support Pfister's contention about the Indian origin of all Roman cotton. There is no firm archaeological evidence yet, however, for the nature of Indian cotton cloth in its homeland at the period of the *Periplus*; but scholars assume that the Z spin-direction prevailed there in antiquity as in the later Middle Ages (Bellinger 1959: 2; Pfister 1951: 32). If so, the tradition would coincide with that of the spinners responsible for the Z/Z cottons at Berenike. It should be noted, however, that the imports listed in the two shippers' documents cited above are of sheets of plain cotton cloth. The Z/Z group at Berenike by contrast contains, not just plain tabby, but also self-band and cut-loop decoration, blue checks, resist-dyed fabrics and cloth incorporating tapestry-woven wool bands. These give pause for thought; for their distribution as presently known is limited geographically.

Self-bands, which give a subtle ribbed effect in the weft direction were an age-old feature of linens woven in the Nile Valley (van t'Hooft et al. 1994: 32–33) and it is no surprise to find them on cottons in the eastern Roman provinces (Sheffer, Tidhar 1991: 23 fig.28 Cat. n. 101). Whether the technique was practised further east is unknown. Looped pile in linen - less often cut than uncut - has a similar history in Egypt (Barber 1991: 149–150; van t'Hooft et al. 1994: 146 fig.9) and the eastern Mediterranean. Again, its eastward distribution is uncertain.

Check fabrics - usually in the form of a blue-dyed grid on a pale undyed ground, sometimes open, sometimes closer set, and supplemented occasionally by extra colours - were a popular component of the decorative repertoire of weavers both in the eastern Roman provinces and in the western part of the Parthian and Persian Empires. There are examples in cotton from Palmyra (Stauffer 1995: 64 Abb.100) and from At-Tar (Fujii 1980: 191 no.8, col.pl., no.9; 195 no.30; 197 nos 33, 34). Their Roman date has sometimes been regarded as suspect, as was noted above, largely because blue-check cottons were - and are - ubiquitous in the Islamic world. But there are now enough stratified pieces to allay those fears.

Discovery or recognition of resist-dyed fabrics of Roman date is a relatively recent development. In cotton there is a parallel to the Berenike pieces from Abu Sha'ar (Z/Z) (Bender Jørgensen, Vogelsang-Eastwood 1991: 3) and several more from the tombs of Kalabsha in Lower Nubia (Strouhal 1984: 248–9, pl.83). Less certainly pre-Islamic are three fragments from the tower-tomb of Elahbel at Palmyra showing floral designs in white (reserved) on red or green (Pfister 1937b: 16 nos T71, T72, T73, pl.IV),

and one (Z/S) from the tomb of Iamblichus has linear registers in blue and red (Stauffer 1995: 64 Abb.101; Pfister 1940: 18 no.T97). There is little doubt, however, about the Roman date of a white-on-blue floral resist-dyed Z/Z cotton from At-Tar (Fujii 1976: 189 no.167, col.pl.; 1980: 186 no.11). The South Arabian site of Qaryat al-Fau is also said to have yielded 'printed' fabrics with classically inspired decoration (*Illustrated London News* 273, April 1985: 52–3). Echoes of Mediterranean themes can also be discerned on a white-on-blue resist-dyed cotton from Tomb 1 at Niya-Minfeng on the Silk Road south of the Taklamakan Desert (Vogelsang-Eastwood 1990: I-III, 63 pl.2; von Wilckens 1993: 11–18, fig.1). It is of Eastern Han date (*c.*AD25–221) and may be added to the list of Hellenistically inspired textiles travelling from the west towards China (Wu Zhen 1989: 50–51).

Alongside the cottons is a series of resist-dyed linens, largely white on dark blue, degaged from late Roman graves in Egypt and manifestly parts of huge wall-hangings (Kötzsche 1979: 433–436; Flury-Lemberg 1988: 358–366 Cat.no.43; Lorquin 1992: 282–284 Cat.no.117, col.pl.). The earliest resist-dyed fabrics, however, are in wool, notably the examples from Mons Claudianus (Bender Jørgensen 1991: 93). It is apparent therefore that Egyptian dyers had a good deal of experience in resist-dyeing and there is no call to regard the art as exotic.

The fifth mode of decorating the Z/Z cotton fabrics found at Berenike was the insertion of tapestry-woven wool bands. Simple bands in a colour contrasting with the ground or more complex roundels and panels had a long history in the East Mediterranean (Wild 1967) and examples are to be found in virtually every excavated textile corpus in the Roman world. Parthian and Persian art within the former Seleucid kingdom indicates that there was an equally strong tradition of tapestry weaving there, too (al-As'ad, Schmidt-Colinet 1995: 28–53). A cotton cloak from At-Tar, for instance, has the familiar first- and second-century feature of a tapestry-woven 'edge rectangle', together with H-shaped inserts (Fujii 1980: 188 nos 15, 16, col.pl.); the warp of the ground is S-spun, the weft Z-spun, a regional trait.

Of the five decorative techniques reviewed above, three - self-bands, long pile and tapestry-woven inserts - can be found throughout the Graeco-Roman world. Blue checks and the practice of resist-dyeing are both attested in the eastern Roman provinces, but in later centuries at least they were endemic in, or carried to, the furthest corners of the Islamic world. Only tapestry weaving offers any foothold in the search for the origin of the Berenike Z/Z cottons; for on present knowledge it seems confined to those weavers and lands where Hellenistic culture was a living force.

In India there is no sign yet that local weavers had taken to the art of tapestry-weaving, although according to the author of the *Periplus* fancy textiles from Roman Egypt found a ready market in the Indian kingdoms (Casson 1989: 21–24). Eager reception of Graeco-Roman artefacts, however, did not necessarily lead to active production abroad of goods in the same style. Nonetheless there is a growing recognition that there were significant Hellenised communities in the Indian ports (Begley, De Puma 1991) and this fact might one day force a revision of the present disinclination to accept the idea of Indian tapestry weaving.

Much closer to Egypt the high reputation of Yemeni textiles in the Islamic East (Serjeant 1972: 122–134) may encourage one to speculate about their antecedents. But cotton growing in the Yemen on a commercial scale is not attested before the tenth century (Watson 1983: 39–41), and in the early Roman period the region was a net importer of Indian cotton (*Periplus* 31, 32). No cotton, moreover, was reported among the textiles at Qaryat al-Fau, capital of the South Arabian state of Kinda (al-Ansary 1982: 24).

Between South Arabia and India lies the Gulf, where cotton was already being grown on Bahrein in the fourth century BC, as was noted above. Much of that region was in the hands politically of the Hellenised Parthian and later Sasanian Persian rulers, but even in eastern Arabia outside their direct control there is evidence in the archaeological record for considerable Graeco-Roman influence (Boucharlat, Salles 1984: 341–350). Local weavers therefore could well have been familiar with tapestry. Given the climate and geography of the Gulf, however, it seems unlikely that it could have had an

indigenous cotton industry in antiquity based on home-grown fibre and capable of producing for export. The scale of Bahreini cotton growing must have been limited. Mesopotamia had a cotton industry in the later Middle Ages (Serjeant 1972: 39; Lombard 1978: 72–73), but there is no direct evidence for it at an earlier date.

It is by now apparent from this discussion that there can be no confident response to the question of where the Z/Z cottons at Berenike were made. To argue for on the spot production at Berenike from imported yarns merely pushes the problem away without solving it, and, given the nature of the site, is inherently improbable. At both At-Tar and at Kasr al-Yahud the yarns in the cotton textiles were recorded as S/S, S/Z and Z/Z in approximately equal numbers (see above). The position is almost identical at the early Islamic site of Nahal 'Omer in the Arava (Baginski, Shamir 1995: 23). It suggests that the sites were tapping directly several different sources and/or reflecting several different spinning and weaving traditions. What this means in real terms is a matter for debate.

The differences in character between the S/S and the Z/Z groups at Berenike (none are S/Z) may have given the misleading initial impression that identifying provenance should be a simple matter. Yet if Z/Z cottons from India are among the plain Z/Z fabrics at Berenike, as the wording of *P. Vindob. G* 40.822 hints that they might be, we could not recognise them with our current field techniques of analysis and distinguish them from Z/Z textiles from a different region. Future progress may rest with analytical methods of provenancing which have not been tried in Egypt before.

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Bibliography

Abbreviations

O. Douch: H. Cuvigny, G. Wagner, *Les Ostraca grecs de Douch, Documents de Fouilles* 24, Fasc.I, Cairo: Institut français d'Archéologie Orientale, 1986.

P. Iand.: C. Kalbfleisch, *Papyri Iandanae*, Leipzig-Berlin: Teubner, 1912–1938.

P. Lond.: F. G. Kenyon, H. I. Bell, *Greek Papyri in the British Museum* III, Oxford: University Press, 1907.

P. Mich.: H. C. Youtie, J. G. Winter, *Papyri and Ostraca from Karanis, Michigan Papyri* VIII, Ann Arbor: University of Michigan, 1951.

P. Ox.: E. W. Handley et al., *The Oxyrhynchus Papyri* LIX, Oxford: University Press, 1992.

SB: F. Preisigke, F. Bilabel, E. Kiessling, *Sammelbuch Griechischer Urkunden aus Aegypten*, Wiesbaden: Harrassowitz, 1963.

al-Ansary, A.R.
1982 *Qaryat al-Fau: A Portrait of Pre-Islamic Civilisation in Saudi Arabia*, London: Croom Helm.

al-As'ad, K., A.Schmidt-Colinet
1995 Kulturbegegnung im Grenzbereich, in A.Schmidt-Colinet 1995: 28–53.

Baginski, A., O.Shamir
1995 Early Islamic Textiles, Basketry, and Cordage from Nahal 'Omer, *'Atiqot*, XXVI: 21–42.

Bagnall, R.S.
1986 Papyri and Ostraca from Quseir al-Qadim, *Bulletin of the American Society of Papyrologists*, 23: 1–60.

Barber, E.J.W.
1991 *Prehistoric Textiles*, Princeton: University Press.

Begley, V., R.D.de Puma
1991 *Rome and India: The Ancient Sea Trade*, Madison: University of Wisconsin Press.

Bellinger, L.
1959 *Workshop Notes, Paper* 20, November 1959, Washington: Textile Museum.
1962 Textiles, in H.Dunscombe Colt, *Excavations at Nessana I*, London: British School at Jerusalem: 92–105.

Bender Jørgensen, L.
1991 Textiles from Mons Claudianus: A Preliminary Report, *Acta Hyperborea*, 3: 83–95.

Bender Jørgensen, L. and G.M.Vogelsang-Eastwood
1991 The Abu Sha'ar Textiles 1991, *Archaeological Textiles Newsletter*, 13: 3–4.

Bergman, I
1975 *Late Nubian Textiles, The Scandinavian Joint Expedition to Sudanese Nubia* 8, Copenhagen: Munksgaard.

Betts, A., K.van der Borg, A.de Jong, C.McClintock, M.van Strydonck
1994 Early Cotton in North Arabia, *Journal of Archaeological Science*, 21: 489–499.

Boucharlat, R., J.F.Salles
1984 *Arabie Orientale, Mésopotamie et Iran Méridional de l'Age du Fer au Début de la Période Islamique*, Paris: Editions Recherche sur les Civilisations.

Brookner, J.
1979 Textiles, in D.S.Whitcomb, J.H.Johnson, *Quseir al-Qadim 1978: Preliminary Report*, Cairo: American Research Center in Egypt: 183–195.

Bülow-Jacobsen, A., H.Cuvigny, J-L.Fournet
1994 The Identification of Myos Hormos: New Papyrological Evidence, *Bulletin de l'Institut français d'Archéologie Orientale*: 29–38.

Calvet, Y.
1984 Tylos et Arados, in Boucharlat, Salles 1984: 341–345.

Casson, L.
1989 *The Periplus Maris Erythraei*, Princeton: University Press.
1990 New Light on Maritime Loans: P.Vindob.G 40822, *Zeitschrift für Papyrologie und Epigraphik*, 84: 195–206.

Chowdhury, K.A., G.M.Buth
1971 Cotton Seeds from the Neolithic in Egyptian Nubia and the Origin of Old World Cottons, *Biological Journal of the Linnaean Society*, 111: 303–312.

Clutton-Brock, J, V.Mittre, A.N.Gulati
1961 *Technical Reports on Archaeological Remains*, Poona: University of Poona.

Crowfoot, E.
1979 Textiles, in R.D.Anderson, W.Y.Adams et al., Qasr Ibrîm, 1978, *Journal of Egyptian Archaeology*, LXV: 39–40.

Crowfoot, E., J.M.Plumley, W.Y.Adams
1977 Qasr Ibrîm, 1976, *Journal of Egyptian Archaeology*, LXIII: 29–47

Crowfoot, G.M., F.L.Griffiths
1934 On the Early Use of Cotton in the Nile Valley, *Journal of Egyptian Archaeology*, XX: 5–12.

Dalley, S.
1991 Ancient Assyrian Textiles and the Origins of Carpet Design, *Iran*, XXIX: 117–135.

Eastwood, G.M.
1982 Textiles, in D.S.Whitcomb, J.H.Johnson, *Quseir al-Qadim 1980: Preliminary Report*, Malibu: Undena Publications: 285–326.

Erim, K.T., J.M.Reynolds
1970 The Copy of Diocletian's Edict on Maximum Prices from Aphrodisias in Caria, *Journal of Roman Studies*, LX: 120–141.

Ernout, A., A.Meillet
1967 *Dictionnaire de la Langue Latine*, 4th edition, Paris: Klincksieck.

Flury-Lemberg, M.
1988 *Textile Conservation and Research*, Bern: Abegg-Stiftung.

Fujii, H.
1976 *Al-Tar I: Excavations in Iraq 1971–1974*, Tokyo: Kokushikan University Institute of Ancient Iraq Culture.
1980 *Al-Rāfidān I: A Special Edition on the Studies of Textiles and Leather Objects from Al-Tar Caves, Iraq*, Tokyo: Kokushikan University Institute for Cultural Studies of Ancient Iraq.

Gervers, M.
1990 Cotton and Cotton Weaving in Meroitic Nubia and Medieval Ethiopia, *Textile History*, 21.1: 13–30.

Giacchero, M.
1974 *Edictum Diocletiani et Collegarum de Pretiis Rerum Venalium*, Genova: Istituto di Storia Antica e Scienze Ausiliare.

Gopal, L.
1961 Textiles in Ancient India, *Journal of the Economic and Social History of the Orient*, IV: 53–72.

Greiss, E.A.M.
1952 Les plus anciens spécimens de tissus et de fibres de coton découverts en Egypte, Chronique d'Égypte, 53: 321–323.

Gulati, A.N., A.J.Turner
1929 A Note on the Early History of Cotton, *Journal of the Textile Institute*, XX, Transactions: 1–9.

Harrauer, H., P.Sijpesteijn
1985 Ein neues Dokument zu Roms Indienhandel, P.Vindob. G 40822, *Anzeiger der Österreichischen Akademie der Wißenschaften, phil.-hist.Kl.*, 122: 124–155.

Hayes, J.W.
1995 Summary of Pottery and Glass Finds, in S.E.Sidebotham, W.Z.Wendrich 1995: 33–40.

van t'Hooft, P.P.M., M.J.Raven, E.H.C.van Rooij, G.M.Vogelsang-Eastwood
1994 *Pharaonic and Early Medieval Egyptian Textiles*, Leiden: Rijksmuseum van Oudheden.

Jenkins, R.G., G.Wagner
(Forthcoming) *A Farm Account Book from Esment el-Kharab (Dakhleh Oasis)*.

Kajale, M.D.
1991 Current State of Indian Palaeoethnobotany, in J.Renfrew (ed.), *New Light on Early Farming*, Edinburgh: University Press: 155–190.

Kawanishi, H., M.Tatsuno
1995 Technological Studies concerning Textiles, in *Akoris: Report of the Excavations at Akoris in Middle Egypt 1981–1992*, Kyoto: Koyo Shobo: 277–297.

Kötzsche, L
1979 Textiles, in K.Weitzmann, *The Age of Spirituality: Late Antique and Early Christian Art: Catalogue of the Exhibition at the Metropolitan Museum of Art 1977–1978*, New York: Princeton University Press.

Lamm, C.J.
1937 *Cotton in the Mediaeval Textiles of the Near East*, Paris: P. Geuthner.

Lombard, M.
1978 *Les Textiles dans le Monde musulman VIIe-XIIe Siècle*, Paris: Mouton Éditeur.

Lorquin, A.
1992 *Les Tissus coptes au Musée National du Moyen Âge-Thermes de Cluny*, Paris: Réunion des Musées Nationaux.

Mayer Thurman, C.C., B.Williams
1979 *Ancient Textiles from Nubia*, Chicago: Art Institute of Chicago.

Meredith, D.
1957 Berenike Troglodytica, *Journal of Egyptian Archaeology*, XLIII: 56–70.
1958 *Tabula Imperii Romani: Coptos*, Sheet NG 36, Oxford: Society of Antiquaries of London.

Nockert, M.
1988 Vid Sidenvägens ände. Textilier från Palmyra till Birka, in P.Hellström (ed.), *Palmyra: Öknens Drottning*, Stockholm: Medelhavsmuseet: 77–105.

Ogawa, Y., N.Naruse
1976 I.Textiles and Allied Materials, in H.Fujii 1976, 120–201.

Peacock, D.P.S.
1993 The Site of Myos Hormos: a View from Space, *Journal of Roman Archaeology*, 6: 226–232.

Pfister, R.
1934 *Textiles de Palmyre*, Paris: Éditions d'Art et d'Histoire.
1937a L'Introduction de Coton en Égypte musulmane, *Revue des Arts Asiatiques*, 11: 167–172.
1937b *Nouveaux Textiles de Palmyre*, Paris: Éditions d'Art et d'Histoire.
1940 *Textiles de Palmyre* III, Paris: Éditions d'Art et d'Histoire.
1951 *Textiles de Halabiyeh (Zenobia)*, Paris: P.Geuthner.

Pfister, R., L.Bellinger
1945 The Textiles, *The Excavations at Dura-Europos: Final Report* IV, New Haven: Yale University Press.

Picton, J., J.Mack
1989 *African Textiles*, London: British Museum.

Rahmani, L.Y.
1967 Jason's Tomb, *Israel Exploration Journal*, 17: 61–100.

Raschke, M.G.
1978 New Studies in Roman Commerce with the East, *Aufstieg und Niedergang der Römischen Welt*, 2.9.2: 604–1378.

Schlingloff, D.
1974 Cotton-Manufacture in Ancient India, *Journal of the Economic and Social History of the Orient*, 17: 81–90.

Schmidt-Colinet, A.
1995 *Palmyra: Kulturbegegnung im Grenzbereich*, Mainz: von Zabern.

Serjeant, R.B.
1972 *Islamic Textiles: Material for a History up to the Mongol Conquest*, Beirut: Librairie du Liban.

Sheffer, A., A.Tidhar
1991 The Textiles from the 'En-Boqeq Excavation in Israel, *Textile History*, 22: 3–46.

Sidebotham, S.E.
1986 *Roman Economic Policy in the Erythra Thalassa 30 BC - AD 217*, Leiden: Brill.
1991 Ports of the Red Sea and the Arabia-India Trade, in Begley, De Puma 1991: 12–38.

Sidebotham, S.E., W.Z.Wendrich
1995 *Berenike 1994: Preliminary Report of the 1994 Excavations at Berenike (Egyptian Red Sea Coast) and the Survey of the Eastern Desert*, Leiden: CNWS.

Sidebotham, S.E., R.E.Zitterkopf
1995 Routes through the Eastern Deserts of Egypt, *Expedition*, 37 no.2: 39–52.

Stauffer, A.
1995 Kleider, Kissen, bunte Tücher: Einheimische Textilproduktion und weltweiter Handel, in A.Schmidt-Colinet 1995: 57–71.

Strouhal, E.
1984 *Wadi Qitna and Kalabsha-South: Late Roman - Early Byzantine Tumuli Cemeteries in Egyptian Nubia* I: *Archaeology*, Prague: Charles University.

Thür, G.
1987 Hypotheken-Urkunde eines Seedarlehens für eine Reise nach Muziris und Apographe für die Tetarte in Alexandreia (zu P. Vindob. G 40.822), *Tyche*, 2: 229–245.

Vogelsang-Eastwood, G.M.
1990 *Resist-Dyed Textiles from Quseir al-Qadim, Egypt*, Paris: AEDTA.

Wagner, G.
1987 *Les Oases d'Égypte à l'Époche grecque, romaine et byzantine d'après les Documents grecs, Bibliothèque d'Étude* 100, Cairo: Institut français d'Archéologie Orientale.

Watson, A.M.
1977 The Rise and Spread of Old World Cotton, in V.Gervers (ed.), *Studies in Textile History*, Toronto: Royal Ontario Museum: 355–368.
1983 *Agricultural Innovation in the Early Islamic World: The Diffusion of Crops and Farming Techniques 700–1100*, Cambridge: University Press.

van Waveren, A.M.I, W.Z.Wendrich
1995 The Textiles, in Sidebotham, Wendrich 1995: 63–67.

von Wilckens, L.
1993 Images and Symbols of Earth and Water, Good Fortune and Protection, *Bulletin du Centre International d'Étude des Textiles Anciens*, 71: 11–18.

Wild, J.P.
1967 Two Technical Terms used by Roman Tapestry Weavers, *Philologus*, 111: 151–155.
1970 *Textile Manufacture in the Northern Roman Provinces*, Cambridge: Cambridge University Press.
1988 *Textiles in Archaeology*, Aylesbury: Shire Books.
1994 Tunic No.4219: An Archaeological and Historical Perspective, *Riggisberger Berichte*, 2: 9–36.

Wild, J.P., F.C.Wild
1996 The Textiles, in S.E.Sidebotham, W.Z.Wendrich, *Berenike 1995: Preliminary Report of the 1995 Excavations at Berenike*, Leiden: CNWS.

Wilson, L.M.
1933 *Ancient Textiles from Egypt in the University of Michigan Collection*, Ann Arbor: University of Michigan Press.

Winter, J.G., H.C.Youtie
1944 Cotton in Graeco-Roman Egypt, *American Journal of Philology*, LXIX: 249–258.

Wu Zhen
1989 Ancient Woolen Articles: the 'Greek Connection', *China Reconstructs*, XXXVIII/9: 50–51.

BURIALS FROM CAVE C-17 AT HILL-C IN AL-TAR AREA, IRAQ

Ken MATSUMOTO*

After due consideration for the results of the cave distribution survey in the Al-Tar area, we carried out the excavation of Cave C-17, Hill C during the period of December 16, 1975 to February 14, 1976, directed by Professor Hideo Fujii. As a result, Cave C-17 was proved to be one of the most important caves for us to clarify the cave digging purpose of its primary stage as well as the second or third usage of the Al-Tar Caves.

The 4th season's excavation and survey results were accomplished by the hard work of all staff members who participated in this season of work:

Director: Hideo Fujii

Staff members: Ken Matsumoto, Katsuhiko Ohnuma, Katsuaki Wada, Hiroe Inaoka, Toshio Kawana, Junko Matsuo, Nobuko Naruse, Hidemi Ishida, Hisao Yamada, Shin Sugawara, Nadir al-Rawi, and Sabah al-Kadi

The excavation in Cave C-17 was taken charge of by Ken Matsumoto and Katsuaki Wada. Preliminary report of the excavation has been already written in *al-Rāfidān* V-VI [Matsumoto and Wada 1984–1985: 37–50].

Location

Cave C-17 is situated at a spot of the west-side cliff line of Karbala Plateau and about 200 m southeast of Hill-A Caves. The upper entrance of this cave is about 6 m high from the talus, and the lower entrance, from which we entered this cave by ladder, is about 3 m high from the talus. Cave C-17 exists at the same stratum and level as those of C-12 [Ohnuma and Inaoka 1984–1985: 28–36] and C-16 caves [Ii 1986: 1–21, pl.1–8] of Hill-C. They were dug out at the marlstone stratum using the directions of cracks.

Excavation

We classified Cave 17 into two rooms, 1R and 2R (Figs. 1 and 2).

C-17-1R: In this Room, there are only the blocks, flaked off during the digging of the cave, and later accumulated. The entrance to Cave C-17 with the floor extraordinarily low is about 4 m below the upper flat floor of C-17-2R.

C-17-2R: This room consists of an upper flat floor and a lower narrow floor that was dug out about 3 m below the upper one. On the upper flat floor at the entrance of 2R, hard and soft sandstones and marlstones were pilled up, hardened with the mud and fine marlstones for the purpose of closing C-17-2R. Although today we see only a half of the enclosure left on the floor, many traces of the enclosure have been found on the ceiling and both walls, which suggests that this room was completely closed. It also tells us that there were burials in this room.

Condition of disturbed burials

The surface of the whole accumulation in this room was the layer of the naturally deposited sand. Starting to excavate from the surface of the sand, we have found some textile fragments (fragment with stripe pattern band, IV-MK-2, level –35 cm (level 0 = above sea level 78.67 cm, Fig. 2); simple pile textile, IV-

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Fig. 1 Plan of the burials in Cave C-17.

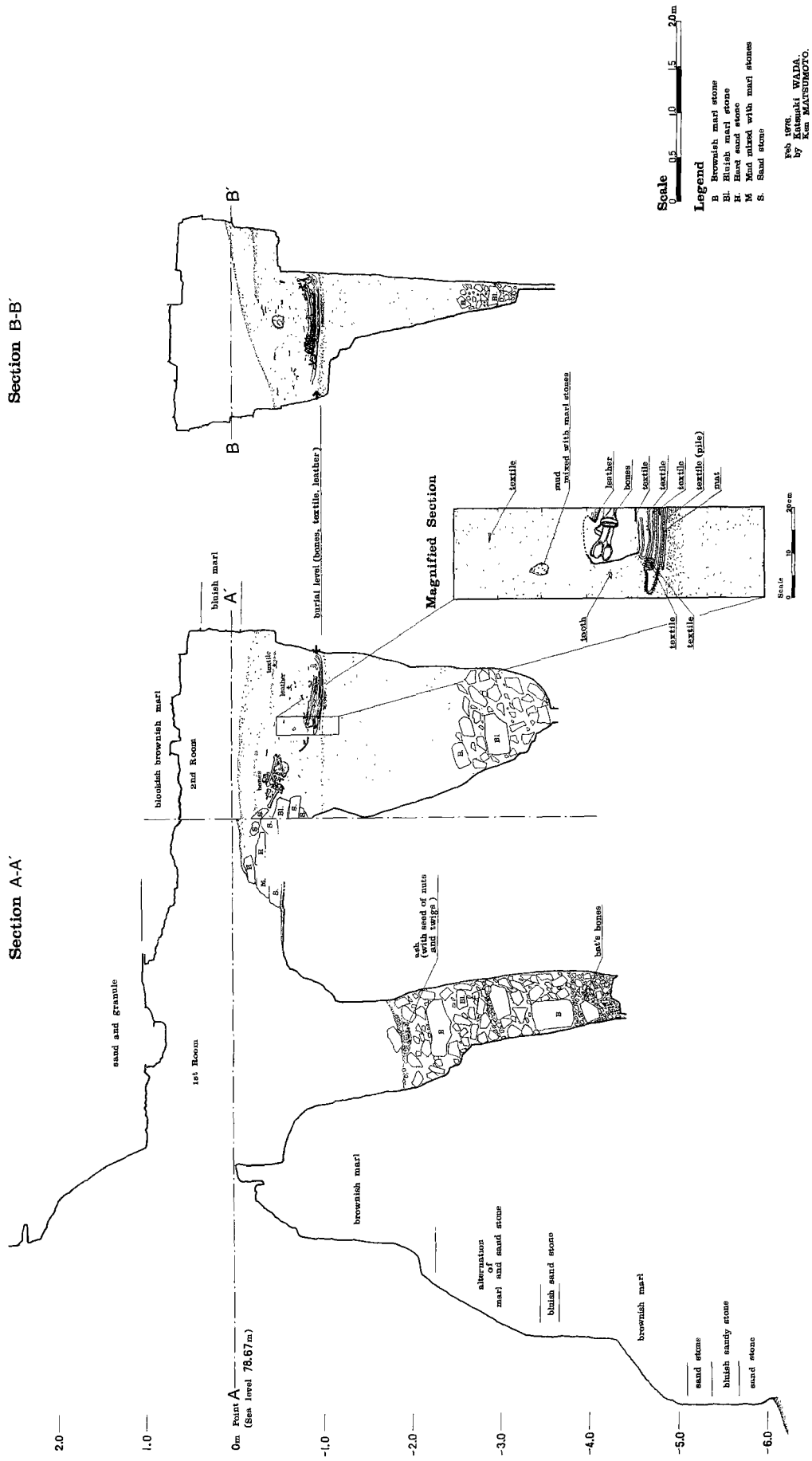

Fig. 2 Sections of Cave C-17.

MK-335, level –37 ~ –41 cm), mats and leather goods. About 35 cm below the surface, many human bones (including three skulls, clearly showing that there were three or more burials in this cave) with fragments of textiles (small, medium-thick fragments with pattern by tapestry-weave technique, IV-MK-761, –45 cm; simple cotton fragments, IV-MK-762, –50 cm) and others have been discovered gathering in a place (–40 cm ~ –60cm) (Fig. 1). And from around the estimated original place (about –82 ~ –92 cm) of these burials placed deep in the cave (Fig. 3), we found textile fragments (fragments with H-shape pattern end and with Soumak weave mark, IV-MK-1123, –92.5 cm; fragmentary textile with horizontal stripe pattern, IV-MK-1128, –82 cm; small stitched-up dark purple fragment, IV-MK-1210, –87.5 cm), mats, leather goods, some human bones (the ulna, the ribs, the pelvis, the scapula, etc.), joining parts for woodenware, and blocks of sandstone disturbed in condition. It may be that there was the original burial floor at this level. But, it was not clear whether each body had been buried on the same floor or separate places, as many fragments of the objects were also found above the estimated original place (well-balanced fragments of good quality, IV-MK-433, –58 cm; cotton checker pattern with different interval space, IV-MK-446, –55 ~ –58 cm; dull reddish yellow and yellowish brown cotton thread's checker textile, IV-MK-515, –59 cm; simple variation of plain weave fragment, IV-MK-604, –69 cm; elaborately woven fragment, IV-MK-571, -69 cm; textile with yellowish brown horizontal band pattern, IV-MK-554, –71 cm; gauze-like fragment with band pattern, IV-MK-559, –72 cm; simple, weft-faced fragment, IV-MK-707, –72 cm). We wonder how they were buried. Our presumption is that the evidence found directly under this place is the typical burial. We suppose that a man who destroyed the closed entrance of the cave to steal the treasures must have mooved the burials from their original place to some other one. One more burial without skull which is the typical burial was discovered directly under the disturbed burials.

The typical burial was found in the naturally deposited sand, preserving almost original form on the hardened sand (level –96.5 cm ~ –98.5 cm). In this burial spot, human bones, textiles, leather goods, and a mat were found in nearly original situation.

The results of the analyses on the human bones from Cave C-17 by Professor Hidemi Ishida, Kyoto University, prove that there are four dead bodies in total: one male (more than 30 years old), one male (less than 30 years old), one minority, one child. The typical burial without skull is the male (less than 30 years old), and the skull was moved and gathered in one place with others. The child's skull was not discovered.

In Al Tar caves, many of the discovered burials were disturbed, so that their details have been still unknown. In Cave C-17, however, a typical burial method has been identified for the first time.

Typical burial

Given below is the burial actually taken place from the lowest part (level –80 cm ~ –96 cm) (Figs. 2, 9, 10, 11, 12).

(1) A big mat (145 × 70 cm, IV-MK-1408, –95 ~ –96 cm) made of rush with a colored wool band in part has been laid on the hardend sand floor (–96.5 cm ~ –98.5 cm) (Fig. 4).

(2) A big pile (297.0 × 138.5 cm in original dimensions, IV-MK-1382), which is folded three (145 × 70 cm), has been laid on the mat (Fig. 5).

(3) A dead body (male, less than 30 years old) whose legs and hands have been bent has been buried with cloths on the big pile (Fig. 1). The fragmentary textile with dark red horizontal band (55 × 45 cm, IV-MK-1342, Fig. 8) has been uncovered directly over and under the lower half of a body which was buried with its legs and hands bent down. Deduced from this evidence, its lower half must have been wrapped up in the textile. Further, on top of the large pile (IV-MK-1382), there are three fragmentary strings (IV-MK-1368, 1367, 1365, Figs. 5, 6) and two more textiles, i.e., the textile with torn strings (91.0 × 66.0 cm, IV-MK-1344, Fig. 6) and the large cloth soiled with decayed corpse (116.0 × 183.0 cm, IV-MK-1343, Fig. 7) unearthed in oder of excavation. The presumption is that these two

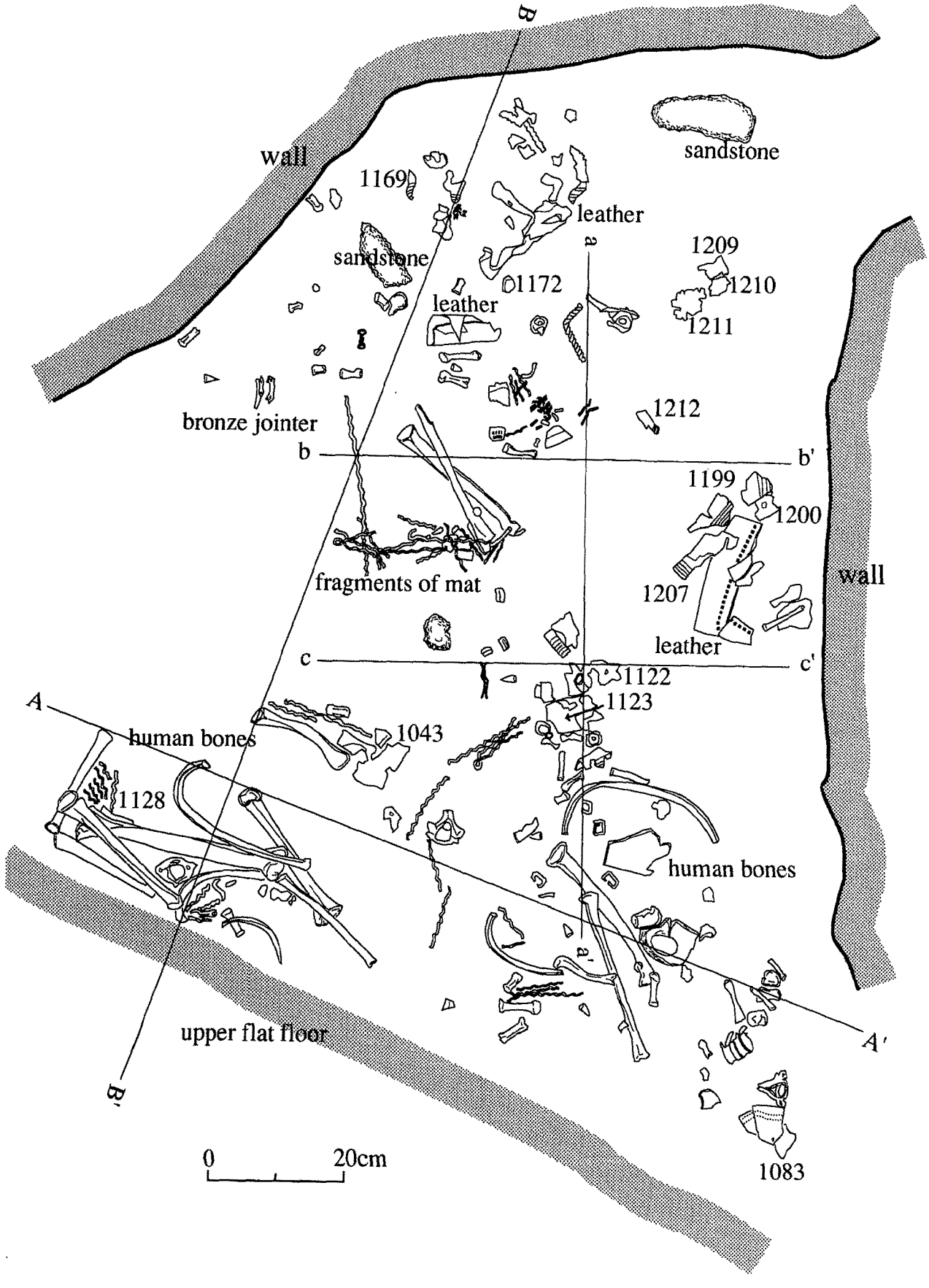

Fig. 3 The distribution of the objects from estimated burial place.

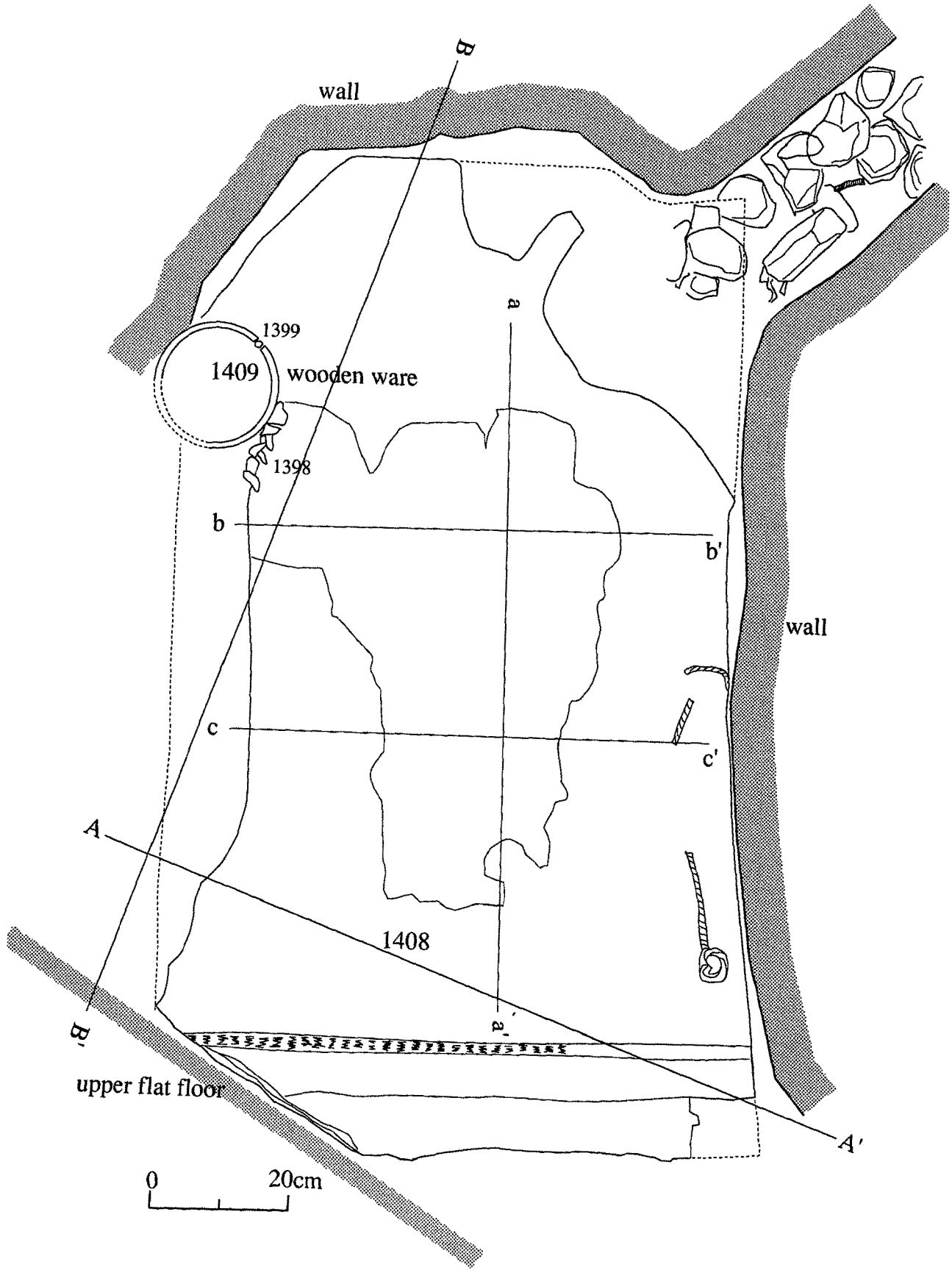

Fig. 4 Mat (IV-MK-1408).

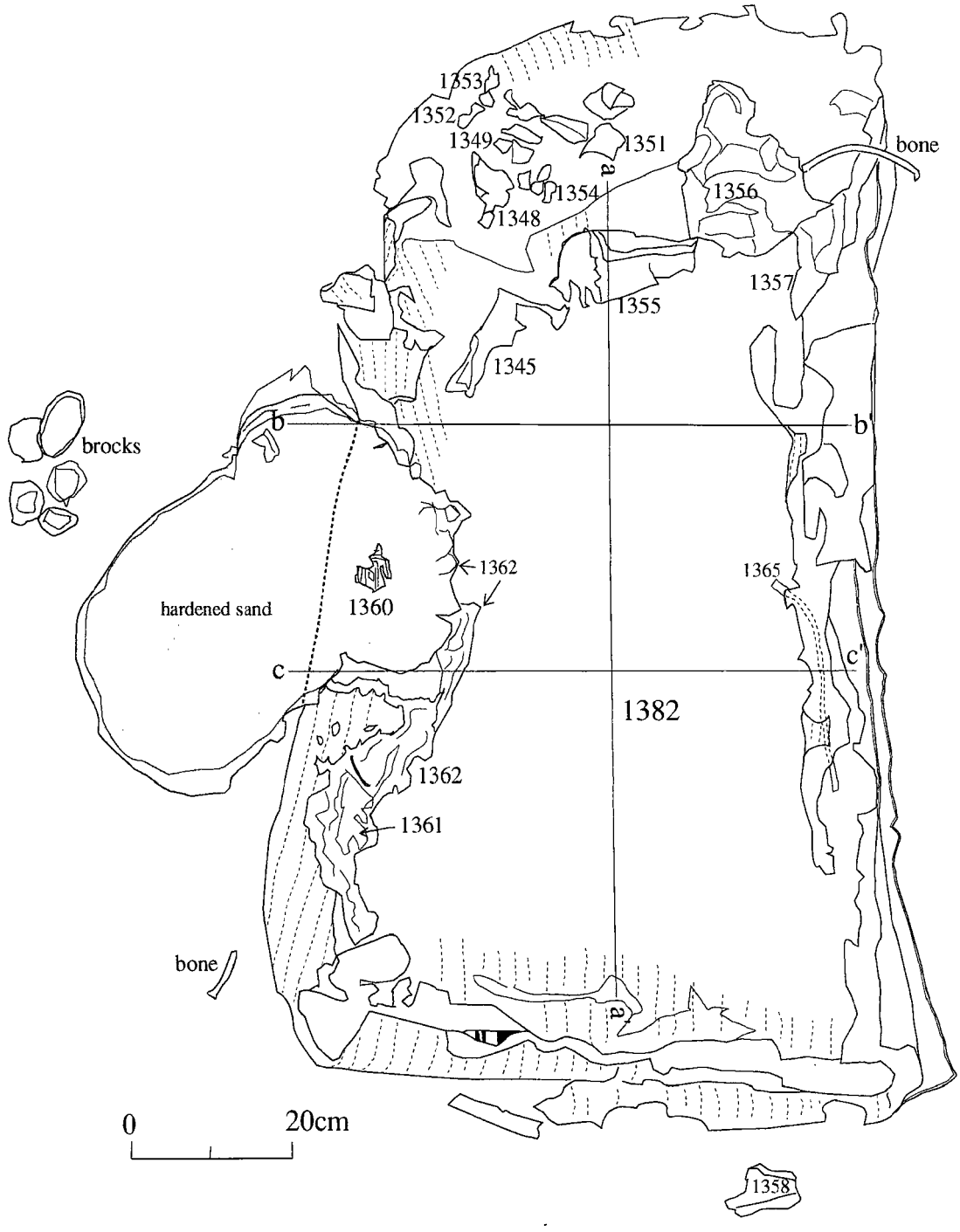

Fig. 5 Pile (IV-MK-1382) and other textiles.

textiles had wrapped up not only the lower half of the body, wrapped up in the textile IV-MK-1342, but also the whole body (about 90 × 60 cm) completely from above, all of which had tied up with two strings. Three strings, one of which (IV-MK-1368, –90 cm) (Fig.6) is under the upper half of the body and the other two (IV-MK-1367, –90 cm, IV-MK-1365, –90 cm) (Figs. 5, 6) are under the lower half of the body, are found between the textile (IV-MK-1344) and the pile. Deduced from the above, it seems that the body wrapped up in three textiles was bound with two strings which had been torn from the textile (IV-MK-1344). Some burial accessories may have been offered there. For example, in front of the breast, there was a moth-eaten woodenware with small bronze jointers, reduced to only keeping

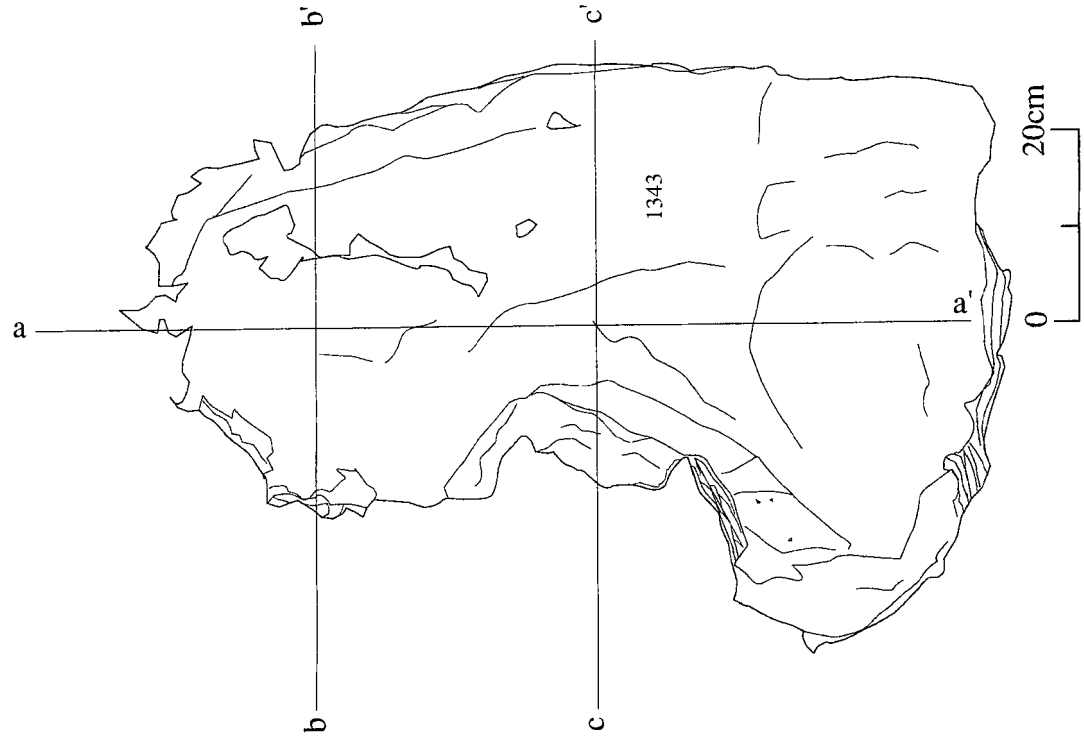

Fig. 7 Textile (IV-MK-1343).

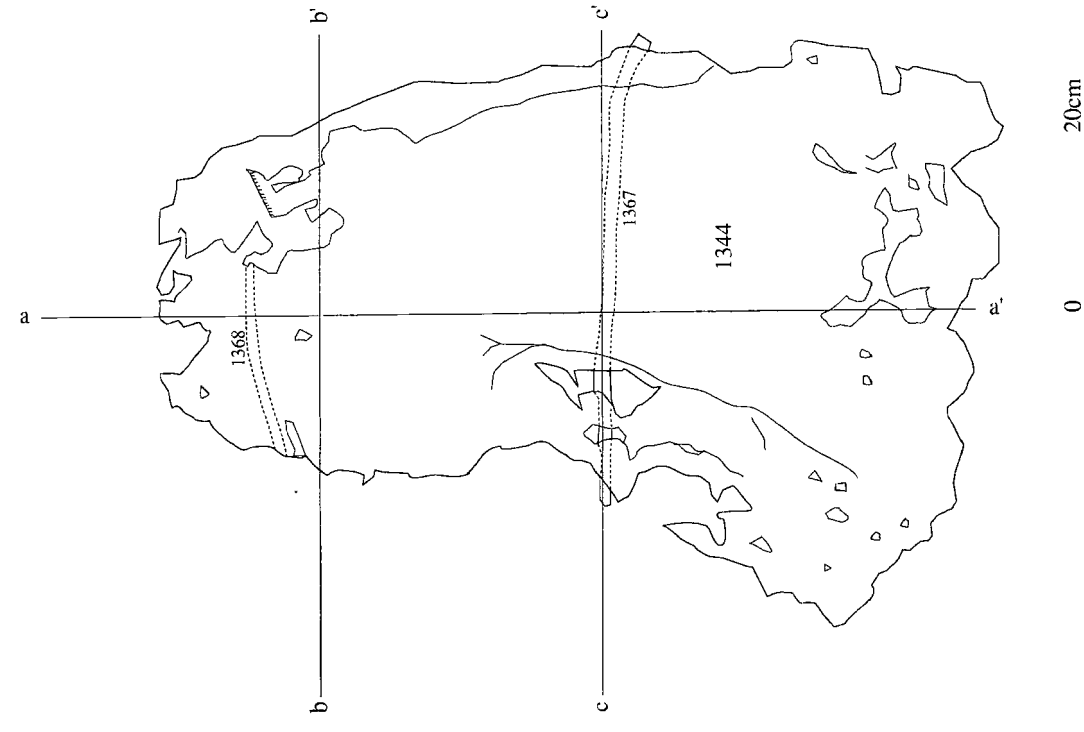

Fig. 6 Textile (IV-MK-1344).

shape (Fig. 4). Others may have been stolen when the skull was moved. Beside the burial, there is a floor hardened by some liquid where a ceremony may have been observed (Fig. 5).

(4) The lower half of the body was covered with leather goods (perhaps a saddle) with some embroidery (IV-MK-1341, Fig. 1) [Fujii (ed.) 1980: 157–167].

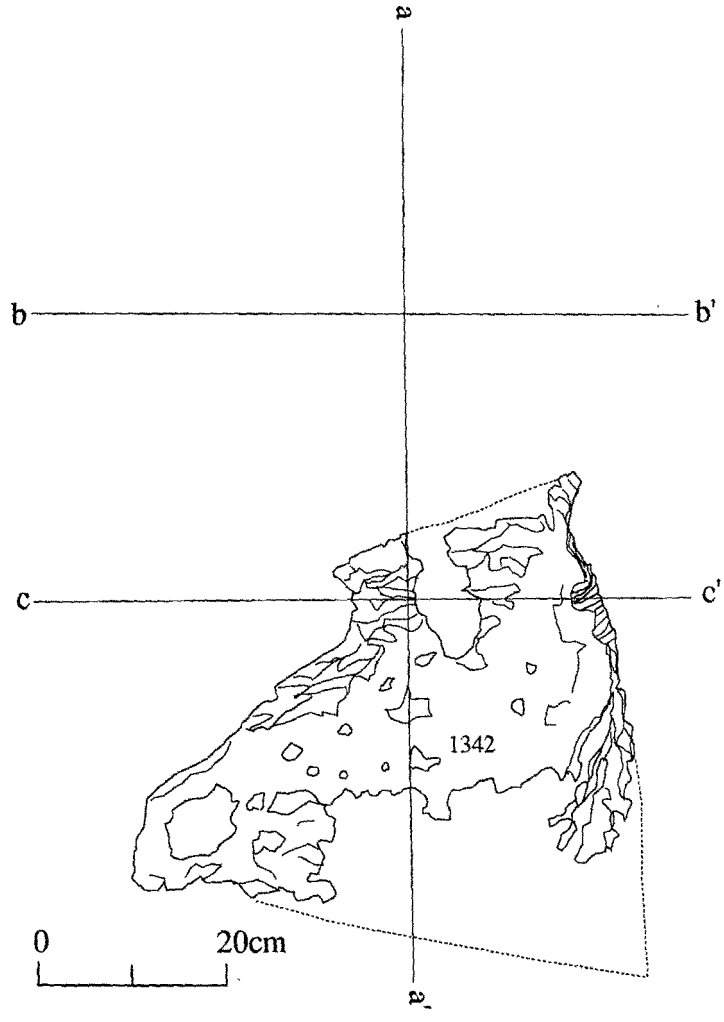

Fig. 8 Textile (IV-MK-1342).

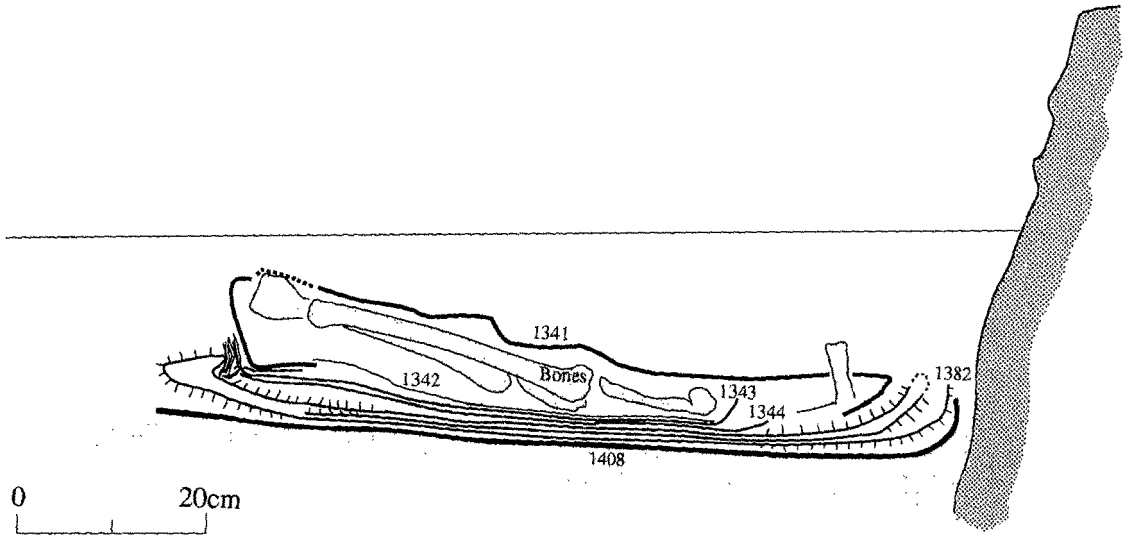

Fig. 9 Section A-A' of the burial.

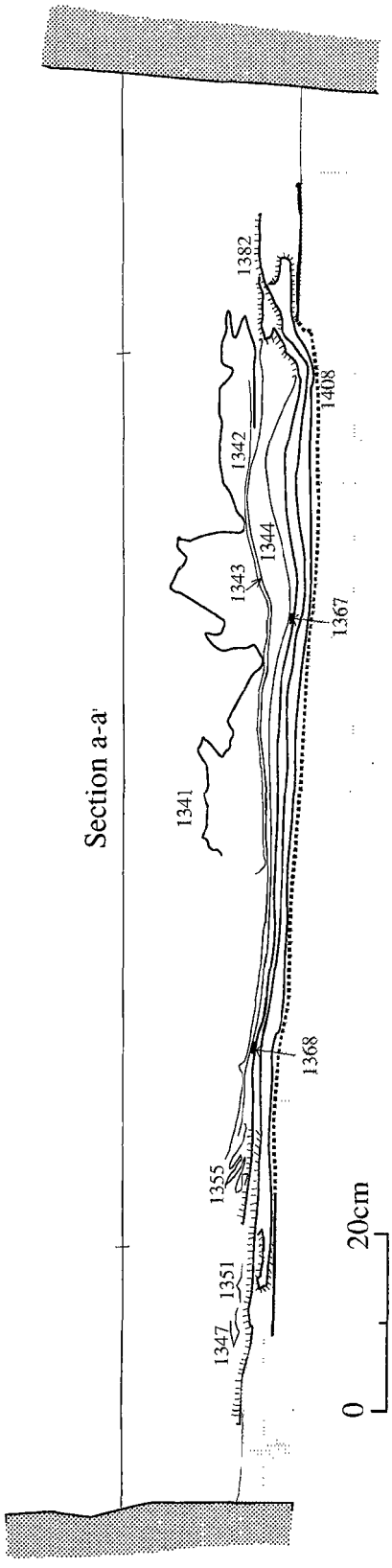

Fig. 10 Section a-a' of the burial.

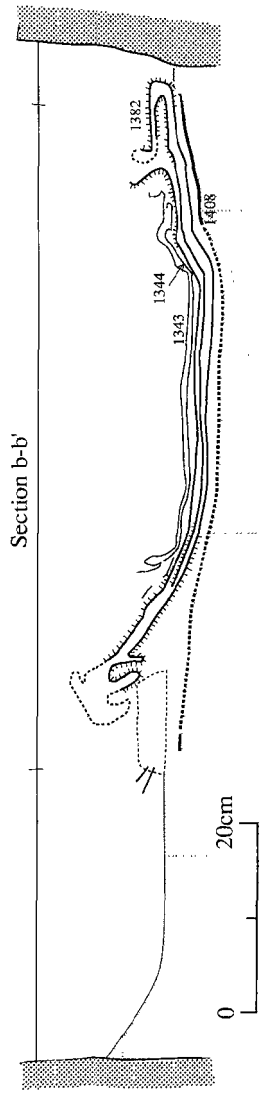

Fig. 11 Section b-b' of the burial.

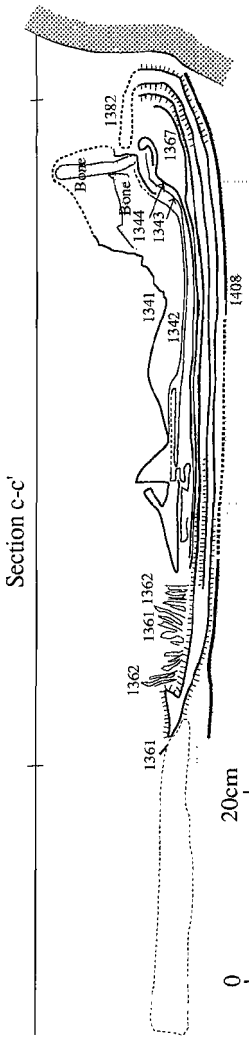

Fig. 12 Section c-c' of the burial.

(5) The upper half of the body which was not covered with leather goods may have been covered with the textile with color gradated horizontal band pattern (IV-MK-1355, –88.5 cm; IV-MK-1356, –86.5 cm, Figs.4, 10), because the fragments of the textile were found near the head.

(6) Some fragments of the large checker textile with border decoration (IV-MK-1362, –88 ~ –91.5 cm) and simple light yellow fragments (IV-MK-1361, –88.5 cm) have been found to overlap each other at the right side of the body (Figs. 5, 12). They have also been found near the head (IV-MK-1357, –88.5 cm) and the feet (IV-MK-1358, –94.5 cm, Fig. 5). There was a fragment of emblem depicting the upper half of a woman by tapestry-weave technique (IV-MK-1360, –88.5 cm, Fig. 5) [Fujii *et al.* 1994: 77, 83, 88, pl.4] near the large checker textile with border decoration. Consequently, it seems that these textiles covered the whole body.

As mentioned above, it has been cleared that the burial used a mat (IV-MK-1408), a pile (IV-MK-1382), three cloths (IV-MK-1342, 1343, 1344), a leather goods (IV-MK-1341), a textile with color gradated horizontal band pattern, etc.(IV-MK-1355), and a large checker textile with border decoration (IV-MK-1362).

This closed cave, which was used secondary for the burials, had not been dug out for graves in its primary stage. This is because this cave contains many blocks of sandstone and marl, with sand accomulating to a depth of about 2.5 m under the burial. In the lower room, we see many chisel traces of fish-scale type on the walls except on the natural crack surface. This room has extraordinarily narrow floors almost without flat floor. Cave C-17 had been abandoned for a long time after the time of primary digging, and during this time the sand was deposited by the wind in the thickness of 3 m. The object of the primary cave digging is still unknown, but it is certain that the caves were secondarily used as burial place.

We analyzed the burial period by carbon 14 at Gakushuin University in Tokyo, obtaining the following results:

GaK-6462 Textile (pile) (IV-MK-1382): 2030 ±110 B.P.

GaK-6463 Textile (leather) (IV-MK-1341): 1750 ±140 B.P.

Al-Tar Caves have yielded very important archaeological materials, especially textiles, though only few textiles have been discovered in Mesopotamia. Inside the caves, they have been kept in good condition, nearly fixed temperature and safty of high place from man and animal. Instead, these burials were disturbed or destroyed by intruders coming to steal burial accessaries, and were eaten by worm. This is why the textiles discovered here have been torn to small pieces. Thus, we find it impossible to join each of the textile fragments together unlike pottery.

We have tried to analyze texture, color, thickness, raw material, apparent diameter, twist, density, etc. of all fragments for the necessity of learning how many clothes they had used each burial, and what kind of cloth they actually used there. In fact, it was not an easy work for us to classify them. As the result, we were able to confirm 23 kinds of cloths in Cave C-17 (analyzed by Professor Fujii and others in this volume). In this way, therefore, we have come to make sure that there was nearly a complete burial given here, where we see a mat, a pile, three cloths, a leather good, a textile with color gradated horizontal band pattern, and a large checker textile with border decoration. This burial has used 5 textiles (three cloths, IV-MK-1342, 1343, 1344, a textile with color gradated horizontal band pattern, etc., IV-MK-1355, and a large checker textile with border decoration, IV-MK-1362) except a mat, a pile, a leather. It proves that the total number 23 kinds of cloths including emblem and string fragments to analyze the textile itself divided by 4 human bodies equals about 5 to 6 cloths per head. Thus, we shall be able to agree to the textile number used for burial of this cave just as the burials of other caves.

The burials in other caves in Al-Tar had also used many mats, leather goods, piles, textiles, and beautiful tapestry textiles with 'H' shape pattern, 'Γ' gamma shape pattern and emblems bearing Hellenistic portraits made of wool. The design compositions and weave techniques of these textiles

are similler to those from Dura-Europos, Palmyra, and the Cave of Letters as well as Hatra Statues, as the Al-Tar area is a very important place for traffic open to the East Mediterranean coastal areas and the Gulf areas [Fujii and Sakamoto 1994: 73–76].

The burial accessaries may have been stolen. We found mats, carpets, saddles leather, woodenware, some accessaries for woman, earrings, necklaces, beads etc. which are the ones easily carried anywhere especially in the desert, but pottery are the ones that have been usually found in the burials of Mesopotamia through any periods. Nevertheless, we have not yet found any city or town site of the settlers who might have been buried in Al-Tar caves, untill today. It seems to us that the Al-Tar caves were secondarily used to bury nomad people and/or caravans during the second to third centuries A.D.

Last, I would like to offer my sincere congratulation to Professor Fujii on the occasion of his birthday. Also, the same greetings from all his staff members of the 4th excavational season in Al-Tar Caves. Now I wish to call to Professor Fujii from my heart, "I owe what I am today to my teacher, Professor Fujii. And we do hope that you will work together with us in good health in Mesopotamia in the future, too".

References

Fujii, H. (ed.)
1980 A Special Edition on the Studies on Textiles and Leather Objects from Al-Tar Caves, Iraq, *al-Rāfidān* I, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.3–318.

Fujii, H. and K. Sakamoto
1994 The Close Relationship between Hatra Sculpture Designs and At-Tar Textile Designs, *al-Rāfidān* XV, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.73–76.

Fujii, H., K. Sakamoto and M. Ichihashi
1994 Human-Figured Emblems by Tapestry-Weave Technique Unearthed from At-Tar Caves, *al-Rāfidān* XV, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.77–93.

Ii, H.
1986 Excavations at At-Tar Caves, The Fifth Working Season: Cave C-16 -Part 1- (in Japanese), *al-Rāfidān* VII, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.1–21.

Matsumoto, K. and K. Wada
1984–1985 IV. Excavation in Hill-C-17 Cave (C-17), in Fujii, H., T. Kawana, K. Matsumoto, K. Ohnuma, K. Wada and H. Inaoka, Preliminary Report on the 4th Season of Excavation at Al-Tar Caves, *al-Rāfidān* V-VI, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.37–50.

Ohnuma, K. and H. Inaoka
1984–1985 III. Excavation in Hill-C-12 Cave (Cave C-12), in Fujii, H., T. Kawana, K. Matsumoto, K. Ohnuma, K. Wada and H. Inaoka, Preliminary Report on the 4th Season of Excavation at Al-Tar Caves, *al-Rāfidān* V-VI, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo, pp.28–36.

TEXTILES FROM AT-TAR CAVES —CAVE 17, HILL C—

Hideo FUJII*, Kazuko SAKAMOTO**
and Mikizo ICHIHASHI***

Foreword

Hill C cave group in at-Tar Site cave groups belongs to the cave group formed by digging the marlstone stratum which is topographically projecting toward Hill A from the Kerbala plateau like a peninsula in the depression area. It is Cave C-17 that is situated closest to the Kerbala plateau among the cave groups so far investigated [Kawana, 1985: pp. 6–13]. Toward the west of Cave C-17, there are Cave C-16 and Cave C-12 continuously dug out on the same level of marlstone stratum with that of Cave C-17. To deserve special attention, at the place between Cave C-17 and its neighboring Cave C-16, we can observe the evidence of a terrace which had been carved at the primary stage of the cave construction and had functioned as a passage of linking the two caves. Nevertheless, more careful observation suggests to us that due to the large difference of floor level between these caves of not less than 3–4 m as we see today, the passage between the two caves is almost impossible at present, with broken pieces of sandstone and marlstone piled up at the presumed spot of entrance to Cave C-17, which looked like a sort of closure [Matsumoto and Wada, 1985: pp. 37–50; Matsumoto, this volume: pp. 299–310]. In consequence, it may well be said that the outside view of Cave C-17 and Cave C-16 today is independent of each other.

Judging from the excavated condition, the textiles can be roughly classified into two according to the uncovered places:

1. one is the disturbed burial level, where three skulls have been found, around which tiny broken pieces of textile fragments have been scattered among the sand deposits all over, so that we could hardly identify them into the same item each.
2. and the other is the burial level placed a little lower than the place 1, where among the sand deposits, we have discovered the burial of a skull-less human body placed on a mat and a pile textile, all of which have been covered with a tanned skin. Here, between the human bone and the pile textile, we have uncovered a mass of some textiles which can be easily identified into the same cloth each.

Compared with the former, the latter is in very good preservation. But we could hardly grasp the details of their patterns owing to the fragmentation and deterioration caused in the textiles.

As a result of carefully examining these fragmentary textiles for identification, they have been classified as the ones made of the following materials:

Sheep fiber and other beast fiber textiles:	Pile textiles	4
	Non-pile textiles	20
Cotton:	Non-pile textiles	5
Rush mat:		1

Of all these 30 textiles, Textile 1 was dealt with as one of the human-figured specimens on the subject of "Human-Figured Emblems by Tapestry-weave technique unearthed from At-Tar Caves"

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together with some other relative data [Fujii, Sakamoto and Ichihashi, 1994: pp. 82–83, Pl. 4a, b].

Identification

Textile 1 Fragmentary human image with earring: Registered No. IV-MK-1360
Textile 2 Large checker textile with border decoration: Registered No. IV-MK-1362-1
Textile 3 Fragments with dark red horizontal band: Registered No. IV-MK-1342-2
Textile 4 Fragments with H-shape pattern end and with Soumak weave mark: Registered No. IV-MK-1123-1
Textile 5 Small, medium-thick fragments with pattern by tapestry-weave technique: Registered No. IV-MK-761
Textile 6 Textile with color gradated horizontal band pattern: Registered No. IV-MK-1355
Textile 7 Textile with yellowish brown horizontal band pattern: Registered No. IV-MK-554
Textile 8 Gauze-like fragments with band pattern: Registered No. IV-MK-559, IV-MK-467-2
Textile 9 Fragments with horizontal stripe pattern: Registered No. IV-MK-1128
Textile 10 Fragment with stripe pattern band: Registered No. IV-MK-2
Textile 11 Small stitched-up dark purple fragment: Registered No. IV-MK-1210
Textile 12 Plain weave fragment with the use of superfine threads: Registered No. IV-MK-1428
Textile 13 Simple, well-balanced fragments of good quality: Registered No. IV-MK-433
Textile 14 Simple, weft-faced fragment: Registered No. IV-MK-707
Textile 15 Simple, variation of plain weave fragment: Registered No. IV-MK-604-3
Textile 16 Elaborately-woven fragment: Registered No. IV-MK-571
Textile 17 Simple, light yellow fragments: Registered No. IV-MK-1361
Textile 18 Large cloth soiled with decayed corpse: Registered No. IV-MK-1343
Textile 19 Textile with torn strings: Registered No. IV-MK-1344
Textile 20 Plain weave, raw wool fragment: Registered No. IV-MK-1350-1
Textile 21 Cotton fragments with checker patterns of irregular intervals: Registered No. IV-MK-446, IV-MK-476-1, IV-MK-477
Textile 22 Checker textile composed of dull reddish yellow and yellowish brown cotton threads: Registered No. IV-MK-515
Textile 23 Simple cotton fragments: Registered No. IV-MK-762
Textile 24 Pile textile with staircase pattern: Registered No. IV-MK-1382-1
Textile 25-1 Simple pile textile: Registered No. IV-MK-335
Textile 25-2 Simple pile textile: Registered No. IV-MK-1209
Textile 25-3 Simple pile textile: Registered No. IV-MK-1436-11
Textile 26 Rush mat with checker-like pattern border decoration: Registered No. IV-MK-1408

Description: weave and design

Textile 2 Large checker textile with border decoration. Representative Specimen No. IV-MK-1362-1.

Specimen IV-MK-1362-1 has a band-like border decoration by tapestry-weave technique lying in parallel with the warp direction of a plain weave checker ground. A part of the band-like border decoration remains about 3 cm in weft direction. If this part is added to a fragmentary cloth with selvage of about 7 cm in width (IV-MK-1362-2a), it is estimated to have been a minimum of about 10 cm in weft direction. The restoration of the cloth attempted by us proves that the border decoration was not passing along the whole length of the checker ground, but was partially woven within a limited range (Pl. 1a).

And Specimen IV-MK-1362-1-a leaves some trace of pattern woven by tapestry-weave technique on the opposite side of its fringe finish, from which it is presumable that a pattern band similar to the

above once existed in parallel with the weft direction of the checker ground. The checker pattern on the ground has been woven with the use of dull reddish yellow and vivid yellowish red threads, forming a square of about 0.67 cm × 0.82 cm each in size. There are such a large number of fragments of this sort that they seem to come from a very large cloth. However, it is impossible for us to estmate its whole length or whole width.

In Specimen IV-MK-1362-1, we see the checker ground wefts and the pattern wefts making U-turn each other with dovetailed tapestry-weave technique in order to weave a thicker pattern band (0.917 mm in thickness) along the warp direction of the checker ground (0.567 mm in thickness). Here, thicker pattern band part has been formed by interlacing a pattern weft more densely with paired waprs each. That is, the adoption of the paired pattern warp enables the pattern weft to pass in high density, thus resulting in the formation of a little thicker pattern band part than the checker pattern on the ground. In order to interwork a single pattern weft with a paired warp on the pattern, firstly at the part close to the pattern band, weave alteration by warp crossing Type A [Fujii, Sakamoto and Ichihashi, 1989: p. 113, Fig. 3A] is done, and next at the pattern band contour, there comes a shifting zone where 7 or so ground wefts are interlaced in high density, which can help prevent the pattern contour from going out of shape and make it clearer [Fujii, Sakamoto and Ichihashi, 1993: p. 115, Fig. 6a].

In result, as observed in Specimen 1362-1-3d, the warps inside the pattern are that two sets of different colors of vivid yellowish red and dull reddish yellow paired warps are placed between a group of several sets of the same color of vivid yellowish red paired warps and a group of several sets of the same color of dull reddish yellow paired warps (Figs. 1 and 2, Pl.1b). Such evidence has also been seen in Textile 41 from Cave C-16 (Specimen No. V-103-19) [Fujii, Sakamoto and Ichihashi, 1996: p. 155, Figs. 7, 8, Pl. 9a]. It is probable that this phenomenon occurred partly because the color threads were odd number 13 when weaving checker pattern on the ground, and partly because of the warp crossing position.

Deduced from the nature (thin cloth) and quantity of the checker fragment cloth surviving to our time, the textile seems to have been a shawl or a veil. It may be thought that a little thicker border decoration part arranged with the thin checker pattern ground will serve effectively as adding weight to the checker ground and bringing out its draping beauty for the checker ground part. For reference, the linen textiles discovered in the sarcophagus which was placed in the underground tomb (in which Queen Yabā seems to have been buried) in Room 49 of NW Palace of Ashurnasirpal II in Nimrud have fringe or the like portions, where many copper cylinders were wrapped [Fibers & Textiles Laboratories, Toray Industries, Inc., 1996: pp. 199–200, Pls. 1–6]. The evidence of the metallic cylinders' being wrapped in the fringe-like portions was probably aimed at the linen cloth's draping beauty as well as at its decorative

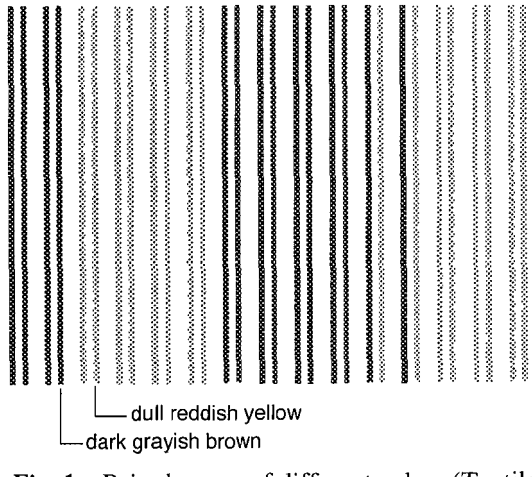


Fig. 1 Paired warps of different colors (Textile 41, Specimen V-103-19, Cave 16).

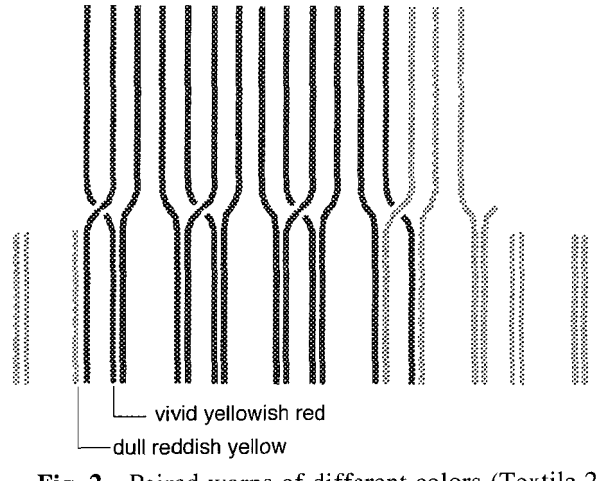


Fig. 2 Paired warps of different colors (Textile 2, Specimen IV-MK-1362-1-3d).

effect.

On the pattern band of the fragmentary Specimen IV-MK-1362-2a, there are floral pattern, dotted pattern and hook-shaped pattern clearly traceable. And still remaining are the geometric pattern in IV-MK-1362-2c and the dotted pattern in IV-MK-1362-2e, where their patterns are inserted by vivid orange narrow lines above and below, running in the band-like way in weft direction on the dark wine pattern part. Vivid orange is used as color thread for outlining geometric pattern and hook-shaped pattern. And the patterns themselves are bright vivid red, and some turkish blue green patterns have also been scattered there. These patterns are similar to those in Textile 40 from Cave C-16 (Specimen V-125-2, V-65-10, V-126-4), and they are common in the method of making the pattern outline by non-horizontal weft weaving technique ('Nagashi-Ori' in Japanese) [Fujii, Sakamoto and Ichihashi, 1996: p. 154, Pl. 8]. But the color thread used for the pattern outline is vivid red in Textile 40 from Cave C-16, whereas that in Textile 2 from Cave C-17 is vivid orange. Selvages have been identified at the pattern portion of the border decoration (IV-MK-1362-2a) and at the checker ground which is presumed to connect with the border decoration (IV-MK-1362-2e). Two warps are used as a single cord, with a simple turning of Type A taken there [Fujii *et al.*, 1989: p. 116]. The warp finish is that 3-4 S-twist warps are made into a single Z-twist cord, and then the resultant two cords are finished into S-twist fringe type.

Textile 3 Fragments with dark red horizontal band. Representative Specimen No. IV-MK-1342-2.

The ground of this specimen is of an elaborate balanced weave composed of warp 1 and weft 2. On a part of the ground, there remains a bit of deep red horizontal weft-faced band by tapestry-weave technique (of about 1.3 cm in warp direction; about 2.5 cm in weft direction). At one end of the pattern portion, the pattern wefts' repeated U-turn has been evidenced (Pl. 1c). It is not impossible to presume from its remaining size and condition that this is a part of top of the pattern constituting a notched part which is depicted at the tops of H-shape and gamma-shape patterns, which is judged from several examples of H-shape and gamma-shape patterns so far dealt with [Fujii, Sakamoto and Ichihashi, 1989: pp. 109-165, Pl. 29, Pl. 31; 1993: pp. 109–133, Pl. 2c, 3b, 4c, 4d, 6a, 6c]. However, in many cases of weaving H-shape and gamma-shape patterns, we see them take the technique of altering warp structure from warp 1 to warp 2 just before getting into the pattern, and then have the technique of interworking pattern wefts in high density there. In spite of that, such technique cannot be seen at the pattern contour of this textile in designing. And on the pattern which consists of warp 1, and weft 1, the wefts are densely interlaced with the warps. And the pattern weft density here (36 ~ 40/cm) is as high as that of H-shape and gamma-shape patterns. So, it has been defined simply as a horizontal band by tapestry-weave technique now that it contains a small number of tiny pattern fragments.

The selvage of the fragment 1342-1-2, which can be identified into Textile 3, uses Type 1 selvage, where 4 warps are made into a cord, and then 2 warps into a cord, with which wefts are interlaced by turns in simple repetition.

In this specimen, there are considerable soiled spots presumably resulting from decayed corpse. Excavation revealed that the cloth was located under the leg bone. It contains such fragmentary pieces that an original size of the whole cloth cannot be counted accurately. By estimation, however, it may have been a cloth of 80 cm × 95 cm or so in dimensions.

Textile 4 Fragments with H-shape pattern end and with Soumak weave mark. Representative Specimen No. IV-MK-1123-1.

This is a weft-faced medium-thick cloth woven with paired wefts. Among the specimens identified into this fabric depending on color and weave structure, there are a fragment with a band-like end by tapestry-weave technique by using dark red wefts (IV-MK-1123-2, Pl. 1e) and a fragment with weave mark where dark red threads are interworked zigzag (IV-MK-1123-3, Pl. 1d). In the former IV-MK-1123-2, a dark red paired weft each is interlaced with a single warp in high density, at the end of which, mutual returning of pattern and ground wefts can be seen by dovetailed tapestry-weave technique. Its

remnant is that one side of the pattern part is about 1.5 cm in warp direction, where we see the dark red pattern wefts returning 7 times. And opposite to this pattern part, across the part of no wefts of about 1.0 cm, there is a weave length of about 0.7 cm, where the same color wefts' returning can be evidenced 4 times (Pl. 1e). It is therefore presumed that the portion including wefts' returning 4 times used to have at least the pattern part of about 1.5 cm in warp direction just as in its opposite side. The specimen resembling the above is an H-shape pattern end of Textile 10 from Cave C-16 (V-71-4b) [Fujii, Sakamoto and Ichihashi, 1993: pp. 120–121, pp. 126–127, Pl. 3b]. Specimen V-71-4b has the pattern length of 4.2 cm including the notched part placed between both ends. Thus, supposing IV-MK-1123-2 is a part of an H-shape pattern end including the notched part, non-pattern space (1 cm long), the total length of the pattern is about 4.0 cm. This is nearly similar to that of V-71-4b from Cave C-16 in total length. Since V-71-46 from Cave C-16 is regarded as an H-shape pattern end, quite natually IV-MK-1123-2 might be considered as an H-shape pattern end with a notched part inserted in-between.

As for the weave mark (IV-MK-1123-3) with the zigzag working, a dark red paired thread is carried manually over two warps and then passed uner and back around the second warp in principle (Fig. 3, Pl. 1d). The process of this kind is repeated several times slantways. The thread turning is in S direction, seen from the back. When turning back to the opposite direction slantways, the weft is back over a single warp, and then over two warps. The process of this kind is repeated several times slantways. The turning direction of the thread is Z direction, seen from the back. This is a technique belonging to Soumak, which can often be seen among the textiles in 6-7th centuries A.D. which were uncovered in Akoris, Middle Egypt [Kawanishi *et al.*, 1995: p. 281, Pl. 110–1, 2] and the other coptic textiles. But Specimen IV-MK-1123-3 is the first example that the at-Tar site has ever yielded. Thus, it will be necessary for us to examine carefully the data of such sort excavated along the East Mediterranean coastal areas. Textile 4 has Type 3 selvage with additional thread of 3-parallel wefts, and its cord alignment is 3.3.3 (IV-MK-584, -471) (Fig. 4).

Textile 5 Small, medium-thick fragments with pattern by tapestry-weave technique. Representative Specimen No.IV-MK-761.

Textile 5 is composed of small, medium-thick plain weave fragments. Rather frequently visible are comparatively coarse portions in weave technique, what with paired wefts here and what with three-parallel wefts there. It is difficult for us to imagine its original textile from the existent fragments, accordingly. Judging from the cloth's roughness in density, it may have been used for a summer outerwear.

As identified data, the weave structure by tapestry-weave technique with the use of similar color of wefts with those used on the ground has been analysed (IV-MK-1021-4, -383), the cloth seems to have had some sort of pattern portion by tapestry-weave technique.

Textile 6 Textile with color gradated horizontal band pattern. Representative Speicmen No.IV-MK-1355 (Pl. 2a).

This is a large cloth with horizontal band patterns of deep red of about 3.5 cm in length and of color gradation of about 12.0 cm in length woven on medium-thick,

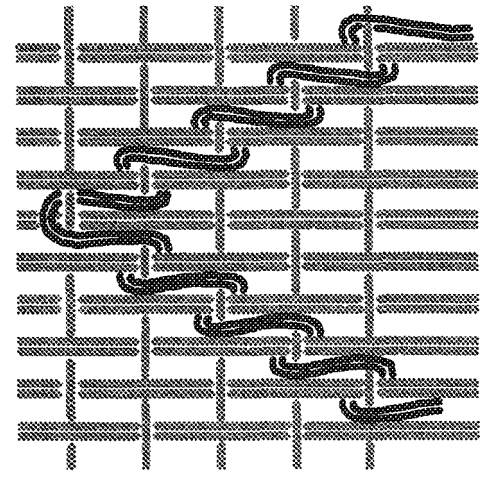


Fig. 3 Soumak weave (Textile 4, Specimen IV-MK-1123-3).

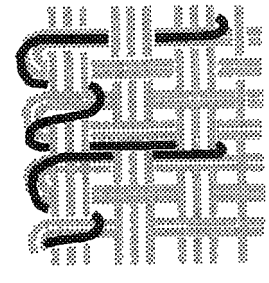


Fig. 4 Type 3 selvage (Textile 4, Specimen IV-MK-584).

dull reddish yellow plain weave ground. Damage inflicted on the cloth makes it impossible to grasp its whole size. The color gradated band pattern consists of a unit of about 12.0 cm in length which contains 4 times' repetition of the wefts' deep red, dark wine and dark reddish brown stripes. And the individual gradated bands are divided by dull reddish yellow lines of 3.0 mm long each. Observation of the remaining data shows that each unit is repeated three times, and their outside, about 10 cm away from them, there are two deep red horizontal stripes of about 3.5 cm long running at an interval of 9.5 cm between them (IV-MK-1356-1, IV-MK-1348, -1355).

Type 2 selvage and 4.4 cord alignment (Fig. 5). In Specimen IV-MK-1356-1, two selvages are skillfully joined together by using two-ply yarn of about 1.0 mm in diameter at an interval of 7.0–8.0 mm each for smooth connection of the color gradated band (Pl. 2b). But the awkward darning technique decreases its durability. The technique remains at low level, different from the level of the elaborate weaving technique.

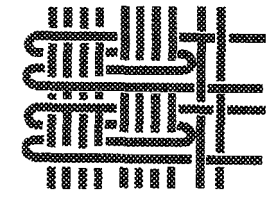


Fig. 5 Type 2 selvage (Textile 6, Specimen IV-MK-1356-1).

For example, Textile 14 from Cave C-16 (Specimen V-132) has a human image with a yellow crown on the head woven by very good tapestry-weave technique, which seems to have been sewn on the base cloth as an emblem, the sewing thread used there is S twist-ply yarn (Twist No.6.0-7.0/cm) of 0.7 mm in diameter. And the emblem has been sewn rather roughly at an interval of 3–4 mm each [Fujii, Sakamoto and Ichihashi, 1994: pp. 82–83, Pl. 2a, 2b]. In this way, we must naturally raise the question why there is such technical differnce between weaving and sewing.

Also, as an example from Dura-Europos, we see a tunic woven as a single cloth, and both its weave starts and weave finishes each other joined together [Pfister and Bellinger, 1945: pp. 14–15]. It is the technique which is seen in Japan as corresponding to so-called 'side-seam' technique. For reference, Specimen C-38-5-1-b from Cave F6, which is a single large thin cloth (size: 27.8 × 36.6 cm) where grape and grapevine scroll patterns band with wave patterns placed above and below have been continuously combined with shaded color band patterns, is an example of both the weave start and weave finish each other sewn together, which is identical with the one seen in Dura-Europos [Fujii ed., 1980: pp. 149–150, p. 274, Pl. V].

On the other hand, in Textile 6, two selvage's sides are joined together by sewing. One presumption about this is that two pieces of fabrics firstly woven separately were made into a tunic by joining them together on the shoulder portions.

Textile 7 Textile with yellowish brown horizontal band pattern. Representative Specimen No.IV-MK-554.

This is a textile with yellowish brown band pattern of about 20.0 cm remaining in maximum length arranged on the variation of plain weave ground (warp 1, weft 2). At the band pattern contour, a shifting zone has been formed by passing 6 rows of paired wefts in high density, thus preventing the pattern line from going out of shape. Just before that, warp weave alteration has been practiced by warp crossing technique. The result is that the pattern is composed of mostly a single weft each in high density and warp composition of 2 · 2 · 1 · 1/ repeat (Pl. 2c). Also, we see some parts where paired wefts are interlaced with warps. The specimen with yellowish brown horizontal band pattern whose warp composition of 2 · 2 · 1 · 1 is interlaced with a single weft each, and whose shifting zone is formed by wefts' working of high density after the warp crossing has been done at the pattern contour is common to Textile 11 from Cave C-16 (Specimen No.V-62-1, V-51-3) in weave structure and weave technique [Fujii, Sakamoto and Ichihashi, 1993: p. 115, Fig. 6b]. Therefore, the band pattern of IV-MK-554 and IV-MK-469 resembles V-62-1 and V-51-3 from Cave C-16 in H-shape pattern composition [Fujii, Sakamoto and Ichihashi, 1993: pp. 121-124, Pls. 4c, 4d]. Observation reveals that the band pattern in

Textile 7 is perhaps an H-shape pattern seen from the weave structure, though it has no portion relative to notched part and the band pattern of only about 2.0 cm in warp direction remains (Cf. H-shape patterns have been measured at least 4.2 cm in length) [Ibid.: pp. 126-127, Table 2].

Textile 8 Gauze-like fragments with band pattern. Representative Specimen No. IV-MK-559, IV-MK-467-2.

Specimen IV-MK-559 (Pl. 2d) is a plain weave gauze-like fragment by using fine threads for both the warps and wefts (warp diameter: 0.2–0.3 cm; weft diameter: 0.2–0.45 cm). The warps used in Specimen IV-MK-467-2 (Pl. 2d) are common to those used in Specimen IV-MK-559 in color, diameter and twist direction, from which both of them can be classified into the same cloth. In Specimen IV-MK-467-2, fine dull red purple single weft (diameter: 0.2–0.4 cm) is interlaced with paired warps in high density. Concerning Textile 16 from Cave C-12, which is a gauze-like thin cloth with horizontal stripe pattern, both the ground warps and wefts are similar to those in Textile 8 in thread diameter, color and density, and the pattern has paired warps interworked with a single weft each [Fujii, Sakamoto and Ichihashi, 1989: pp. 144–146, Fig. 28, Pl. 32]. That is, when shifting from ground to pattern, warp crossing has been conducted at the pattern contour, and then warp composition from warp 1 to warp 2 has been altered, and the result is that warp 2 · 2 · 2 · 2 has been repeated on the pattern. Judging from the example of Textile 16 from Cave C-12, we regard Specimen IV-MK-467-2 as pattern portion of Specimen IV-MK-559, considering that the evidence of warp crossing was lost there since it cannot be observed today.

To take another example, there is the case of Textile 42 from Cave C-16 [Fujii, Sakamoto and Ichihashi, 1996: pp. 155–156, Pl. 9 b-c] which was defined according to the above concept. Textile 42 is a gauze-like fragment with 'kermes' band pattern. Here, the fragmentary Specimen IV-W-53 (Textile 42) is plain weave cloth with the use of dark blue warps and wefts, while the warps used in the fragment V-41-15 (Texfile 42) are common to those of IV-W-53 in diameter, color and twist direction, but in V-41-15 the paired warp each is interlaced with deep red wefts. Thus, in this case, too, V-41-15, which was thought to belong to the pattern portion of IV-W-53, was classified into IV-W-53 as the same cloth, after the example of Textile 16 from Cave C-12. In IV-W-53, however, we failed to locate the trace of warp crossing technique to turn from warp 1 to warp 2. In this respect, Specimen V-41-15 from Cave C-16 closely resembles Specimen IV-MK-467-2. Type 2 selvage and 3 · 2 cord alignment can be traced in this specimen (IV-MK-467-2). Thus, it is presumable that Specimen IV-MK-467-2 is a part of band pattern because it has a selvage, which can be deduced from the evidence seen in Textile 16 from Cave C-12 [Fujii, Sakamoto and Ichihashi, 1989: pp. 144–146, Pl. 32C].

Specimen IV-W-53 (Textile 42) from Cave C-16 is similar to Specimen IV-MK-559 (Textile 8) from Cave C-17 in the thicknesses of the ground warp and weft, twist direction, twist count and color. And, both the band pattern-like patterns, V-41-15 (Textile 42) and IV-MK-467-2 (Textile 8), are composed of warp 2 · 2 · 2 · 2/repeat densely interlaced with dark red wefts. However, the pattern wefts are different in twist direction: Specimen V-41-15 from Cave C-16 has Z-twist weft, whereas Specimen IV-MK-467-2 from Cave C-17 has S-twist weft. Moreover, they slightly differ in the colors of warps and wefts, so that Textile 42 from Cave C-16 and Textile 8 from Cave C-17 cannot be defined as the same cloth.

Textile 9 Fragments with horizontal stripe pattern. Representative Specimen No. IV-MK-1128.

The cloth contains 4 different colors of horizontal stripes on rather thick plain weave ground with the use of dull reddish yellow warps and wefts. The horizontal stripes differ in length. The threads used for warp and weft are irregular in diameter: some are nearly twice as large as others in diameter. Thus, to be equal to a thread of large diameter, it is so devised that threads of small diameter are paired into a thread of large diameter. This is why we see paired warps and wefts used at random in Textile 9. It can therefore be said that this is a textile with structure irregularity.

As for its selvages, the one of 3 · 2 cord alignment and the one of 2 · 2 cord alignment have been stitched up (IV-MK-1043-1, -2) (Pl. 2e). They seem to be the right selvage and the left selvage of Textile 9. Faint traces of warp finishing method remain here. That is, a paired warp is firstly put into Z-twist, two sets of which are made into S-twist, which is lastly finished into rope or so by gradually adding warps to them (IV-MK-1128).

Textile 10 Fragment with stripe pattern band. Representative Specimen No. IV-MK-2.

Viewed from the examples so far excavated, the portion where dull reddish yellow threads are used for warp and weft has been regarded as the ground of this specimen. This is the specimen which contains a stripe pattern band with bright green yellow wefts and deep yellowish red wefts interworked with warps respectively. The bright green yellow part of 0.3–0.4 cm in length has been divided by the deep yellowish red stripe. Most of the bright green yellow threads used here are two-ply yarn.

Textile 11 Small stitched-up dark purple fragment. Representative Specimen No. IV-MK-1210.

This is the specimen where two textile pieces are stitched up into one by using plied thread (1.0–1.2 mm in diameter; § ⟩— z). Here, it has been made into a weft-faced textile with the use of fine dark purple wefts in high density.

Textile 12 Plain weave fragment with the use of superfine threads. Representative Specimen No. IV-MK-1428 (Pl. 3d).

This is a fragmentary plain weave textile by using exceedingly fine warp and weft of 0.12–0.23 mm in diameter, 27–34/cm in warp density and 25–27/cm in weft density. A strong twist is given to both the warp and weft, whose twist count shows 10–14/cm for both. The strong twist makes the whole cloth rustling finish. The use of the superfine warp and weft without irregular diameter reveals that the people of those days were able to pick out good quality sheep fiber with care in the first place. And then we can learn that there used to be high technique of producing yarn of strong twist by spinning the fiber into fine thread equivalent to that of modern technology. We notice that most of the textiles uncovered at at-Tar Caves have been the products of such high technique as spinning yarn of regular diameter.

Textile 13 Simple, well-balanced fragments of good quality. Representative Specimen No. IV-MK-433.

This is a specimen where paired wefts are interlaced with warps not in high density but while keeping balance. We see no traces of its structure damage here. So, this is considered to be the technically excellent textile.

Textile 14 Simple, weft-faced fragment. Representative Specimen No. IV-MK-707.

This is a medium-thick, plain weave weft-faced fragment, whose weft density is larger than warp density. It is too small a fragment to obtain minute information from the cloth.

Textile 15 Simple, variation of plain weave fragment. Representative Specimen No. IV-MK-604-3.

A very small, medium-thick fragment with selvage. This is a medium-thick fragment whose paired wefts are interworked with warps in variation of plain weave. Type 2 selvage; 2 · 2 cord alignment.

Textile 16 Elaborately woven fragment. Representative Specimen No. IV-MK-571.

This is a variation of plain weave textile (warp 1, weft 2) with both warps and wefts used in high density. Its selvage consists of a unit of a paired weft's repeating over the cord 4 · 4 three times. More careful observation shows that on the ground close to the selvage, there is only a portion where a paired warp is passing beside a single warp close to the selvage, and the rest are the continuity of a single warp each (Fig. 6, Pl. 3a). And we have had no other data availavle to which this specimen can be identified, to our regret. Thus, we cannot make clear whether the above structure was caused intentionally or by

mistake.

Textile 17 Simple, light yellow fragments. Representative Specimen No. IV-MK-1361.

This is a group of medium-thick patternless fragments woven with the use of a paired weft and a single warp. The largest of them measures 16.0 × 23.0 cm in dimensions.

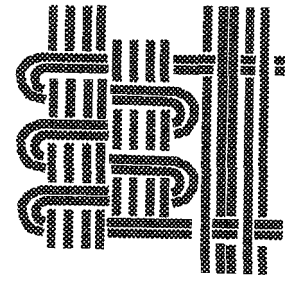


Fig. 6 Type 2 selvage (Textile 16, Specimen IV-MK-571).

Textile 18 Large cloth soiled with decayed corpse. Representative Specimen No. IV-MK-1343.

This is a large, good quality weft-faced cloth without any pattern, where rather fine threads are used for warp and weft, and weft is larger than warp in density. Excavation reveals that the cloth was observed as if it looked like wrapping up a human body from below. This is why just under the corpse, some traces of decayed body have been left afresh on the cloth. And the cloth's damage maybe caused by this has been very great, too. We see one side of the selvage (Type 3, cord 4 · 4 · 4) and the evidence of warps' rope-like finish surviving there. Its selvage has a thick additional thread which is made of putting three wefts or so together. And its warp finish is so made that a set of 2-parallel warp is plied into a rope or the like (2.3 mm in diameter). Textile 18 is observed to own a trace of cutting done from the one end to the other in weft direction. Deduced from the cut section, it is presumed that the severed cloth was used as a string. But we can not identify it.

Textile 19 Textile with torn strings. Representative Specimen No. IV-MK-1344.

The specimen uses rather fine threads for warp and weft just like those used in Textile 18. Different from Textile 18, however, Textile 19 is not so large in weft density, and its warps and wefts are so well balanced in density as to give a soft finish on the cloth. Textile 19 is accompanied with two specimens which were unearthed the way they had been used as strings (Specimen IV-MK-1367; Specimen IV-MK-1368).

Specimen IV-MK-1367 (Pl. 4d) is a cloth of about 5.0 cm in weft direction measured from the selvage end and about 52–53 cm in warp direction, and it has Type 2 selvage and 3 · 3 · 3 cord alignment. The cloth in the fold of about 0.5-1.0 cm each was discovered as a string-like shape, together with Specimen IV-MK-1344. Specimen IV-MK-1367 is nearly identical to Specimen IV-MK-1344 in structural data. Specimen IV-MK-1367 (Fig. 7) seems to have been torn from Specimen IV-MK-1344, which leaves the trace of vertical cutting along the selvage. Excavation shows that Textile 19 (Specimen IV-MK-1344) was spread out under Textile 18, with a portion of string-shaped discoloration evidenced at the center of Textile 19, from which it is presumed that Textile 3 (IV-MK-1342-2), Textile 18 (IV-MK-1343) and Textile 19 (IV-MK-1344) were once tied up with IV-MK-1367 from outside. We found these three textiles badly damaged by decay from the corpses.

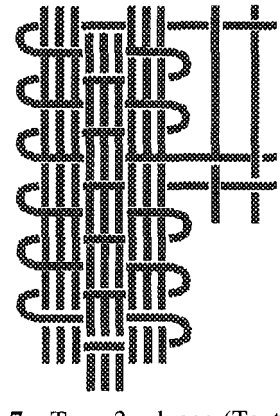


Fig. 7 Type 2 selvage (Textile 19, Specimen IV-MK-1367).

Specimen IV-MK-1368 (Pl. 4c) is a fragment with a trace of rope-like warp finish by using 2–3 warps together to make them plied (about 3 mm in diameter). This is also nearly identical to Specimen IV-MK-1344 in structural data, and it leaves the trace of cutting in weft direction about 1.2 cm inside the warp finish end. Judging from the above, Specimen IV-MK-1368, which is also a piece torn from Specimen IV-MK-1344, seems likely to have been used as a string or like that.

Textle 20 Plain weave, raw wool fragment
Representative Specimen No. IV-MK-1350-1.

Observation of the specimen's thread color suggests that there are white or so fibers mixed in the warps and wefts, and they look fluffy. It is thus thought that they are not dyed threads, but are the ones coming from spinning raw wool. Here, the wefts are interlaced with the warps in rather high density.

Textile 21 Cotton fragments with checker patterns of irregular intervals. Representative Specimen No. IV-MK-446, IV-MK-476-1, IV-MK-477.

Textile 21–1 (Representative Specimen No. IV-MK-446), Textile 21–2 (Representative Specimen No. IV-MK-476-1) and Textile 21–3 (Representative Specimen No. IV-MK-477, -476-2, -372) all are the fabrics with checker patterns where dark bluish green cotton threads are horizontally and vertically passing on the plain weave ground of gold cotton warps and wefts. Their squares differ in size, respectively: e.g., Textile 21–1 has a square of about 3.0 cm × 3.0cm, Textile 21–2, about 3.5 cm × 3.5 cm and Textile 21–3, about 5.0 cm × 5.0 cm each. As for the warp-directed and weft-directed frame lines of these checker patterns, they are made up from the alternate repetition of paired dark bluish green threads passing up and down on the gold ground. In result, these checker patterns look as if they were parapet motif.

As shown below, the above three specimens slightly differ in thread diameter and density, so that we find it rather unreasonable to identify them into a single cloth:

Textile No.	Square size (cm)	Ground thread		Pattern thread	
		Diameter (mm)	Density (/cm)	Diameter (mm)	Density (/cm)
21–1 (IV-MK-446)	ca. 3.0 × 3.0	Warp: 0.20–0.70	12–13	Warp: 0.35–0.60	11
		Weft: 0.20–0.70	9–10	Weft: 0.30–0.80	10
21–2 (IV-MK-476-1)	ca. 3.5 × 3.5	Warp: 0.50–0.60	7–8	Warp: 0.51	6–7
		Weft: 0.40–0.60	9	Weft: 0.45	7–8
21–3 (IV-MK-476-2, -372)	ca. 5.0 × 5.0	Warp: 0.30–0.70	9–10	Warp: 0.50–0.90	16–17
		Weft: 0.30–0.70	8	Weft: 0.50–1.00	9

The following are the particulars of Textile 21–1 and Textile 21–3:

(1) Textile 21–1 (IV-MK-446): There are two separate traces where the cloth was sewn together in weft direction in this specimen (Pl. 4a). And it measures 15.5 cm between the two. The evidence shows that with their cut-out edges having been folded back, and then stitched, the two pieces each were sewn together keeping some margins to seam by using grandrelle thread ($\frac{Z}{Z}$ >— s, about 0.8 cm in diameter) as stitching thread which was made of plying gold thread and dark bluish green thread, component colors of Textile 21, together. Type 1 selvage; cord 3 (IV-MK-446, -391-1). And the fragmentary Specimen IV-MK-396 (Size: 2.0 × 3.5 cm) has a fringe finish of about 10.5 cm in length. The cloth is 11/cm in warp density and 10/cm in weft density, which holds a fair possibility of the cloth being classified into Textile 21–1. In Textile 21, we see some specimens which seem to come from fringe fragments. But this is the only one that leaves evident trace of fringe type warp finish in it.

(2) Textile 21–3 (IV-MK-477, -476-2, -372): A square size of the checker pattern in this specimen has been measured about 5.0 cm × 5.0 cm each by combining the dark bluish green line in weft direction of Specimen IV-MK-477 with the dark bluish green line in warp direction of Specimen IV-MK-476-2. In Specimen IV-MK-476-2 and in Specimen IV-MK-372 which seems to link to Specimen IV-MK-476-2, the dark bluish green warp belonging to a side of the square takes four parallel warps each unlike others, and functions as weaving a plain weave cloth by its interlacing with gold wefts each. And the line of warp used here is 0.4 cm in width, twice as wide as the other warp line width (Pl. 4b). This square is located outermost of the checker patterns. Thus, one presumption of the evidence is that this may have been the technique adopted to make the cloth end more remarkable. This is because we see a plain weave stripe-like pattern in warp direction (0.4 cm in pattern width) woven with the use of four

parallel dark bluish green warp outside at an interval of 0.4 cm, and still outside at an interval of 0.4 cm we see wider dark bluish green stripe pattern (1.8 cm in width) running in warp direction, lastly accompanied with Type 1 selvage but no cord at their terminal portion. Specimen IV-MK-569 (Pl. 4e) reveals the evidence of its pattern end at the selvage contour which is similar to that of Specimen IV-MK-372, from which it seems likely that the weave structure done close to the selvage is uniform in technique. The selvage of Specimen IV-MK-372 (Pl. 4b) has been sewn together with another gold fragmentary cloth after its end was folded, whose stitching thread used at the margin to the seam is cotton grandrelle thread $\frac{-Z}{-Z} \rangle\!\!-$ s (1.3 mm in diameter).

Textile 22 Checker textile composed of dull reddish yellow and yellowish brown cotton threads. Representative Specimen No. IV-MK-515.

This is a checker textile in which 3-parallel dull reddish yellow warps and 3-parallel yellowish brown warps passing by turns are interlaced with paired dull reddish yellow wefts each (Fig. 8, Pl. 3e). Without any selvage or weave end, it is unknown about its whole size in warp direction or weft direction. The cotton used here is S-twist for both warps and wefts, while that used in Textile 21–1 group specimens is Z-twist for both warps and wefts. In the meantime, among the five cotton specimens coming from Cave C-16, S-twist is seen only in warp in Textile 48 (V-47-9), and the rest of all are Z-twist cotton threads [Fujii, Sakamoto and Ichihashi, 1996: p. 158]. It has therefore been proved from the above that of all the at-Tar cotton fabrics, Textile 22, cotton textile, is the first example that S-twist threads have been used for both warps and wefts.

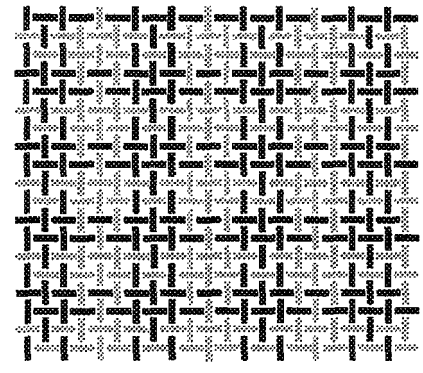


Fig. 8 Checker composition (Textile 22, Specimen IV-MK-515).

Textile 23 Simple cotton fragments. Representative Specimen No. IV-MK-762.

This specimen uses S-twist warps and Z-twist wefts. Among the five specimens uncovered from Cave C-16, there is only one example that takes S-twist warps and Z-twist wefts, and the others have Z-twist for both warps and wefts [Fujii, Sakamoto and Ichihashi, 1996: p. 158].

Two warp-connecting portions are evidenced in Textile 23, from which we have learned the warp and weft directions of the cloth. And it has Type 1 selvage, a simple repetition of returning work.

Textile 24 Pile textile with staircase pattern. Representative Specimen No. IV-MK-1382-1.

(1) Identification and design restoration

This specimen, folded into three, was discovered under a human body. We see selvages remaining on both sides, from which we can learn its width. The pile knotted fragments IV-MK-1382-1 (Pl. 5a) and IV-MK-1382-2 (Pl. 5b) were connected together with several warps at their discovery, but during cleaning they were separated into two pieces. Both items contain edge bands of their own. Observed from the pile knotting direction, it has been judged that IV-MK-1382-1 is a piece of weave finish side, while IV-MK-1382-2 is a piece of weave start side. Thus, we understand how both of them were once in continuity. Next, with regard to a fragment IV-MK-1382-3 (Pl. 5c), it has a pile unknotted edge band, which contains two dark red narrow lines of 0.8 cm length each arranged inside at an interval of 0.8 cm length (brownish gold edge ground), and a brownish gold ground of 1 cm length further inside. Still inside, there goes a dark red portion beyond a ground of 9 cm in length, whose pile tufts are worn out. These pile rows on the 9.0 cm long ground in IV-MK-1382-3 coincide in position with the pile knotted rows worked in the remaining 9 cm long brownish gold ground placed outside of the dark red knotted wider line (10 cm) lying at the weave start side of IV-MK-1382-2. But, the dark red pile

knotted wider line of the weave finish side of IV-MK-1382-1, which is opposite to the 10 cm wide, dark red pile knotted wider line of the weave start side of Specimen IV-MK-1382-2, is 8 cm in width. Its outside, there is a brownish gold pile knotted ground of 2.8 cm in length, and outside of this, there continues the same color of brownish gold pile unknotted portion of 1.5 cm in length. Further outside, there are dark red non-pile narrow lines of 0.4 cm and 0.5 cm each at an interval of 0.5 cm between them. Thus, IV-MK-1382-3 cannot be arranged at the weave finish side of IV-MK-1382-1. It proves consequently that IV-MK-1382-3 does not belong to the side of IV-MK-1382-1, but belongs to the side of IV-MK-1382-2, that is, a part of the weave start border in Textile 24 (Fig. 9). IV-MK-1382-4 (Pl. 5c) is a fragment with a dark red knotted wider line on it, and its selvage still survives. Its selvage wefts' turning direction and code warp number are identical to those of the left selvages in IV-MK-1382-1 and IV-MK-1382-2. IV-MK-1382-2 has both selvages remaining at its dark red knotted wider line. So, IV-MK-1382-4 can be arranged at the dark red knotted wider line placed left side and the knotted ground further outside in IV-MK-1382-1 in position.

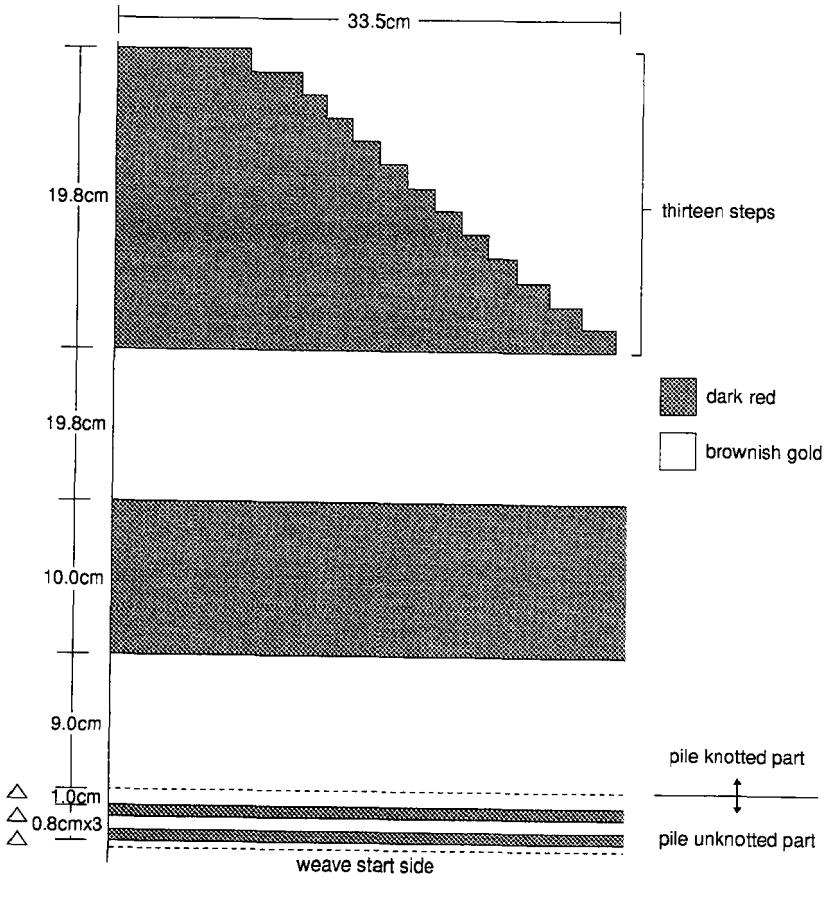


Fig. 9 Detail of the border of Textile 24 (Specimen IV-MK-1382-2, -3), measurement of triangle with staircase: IV-MK-1382-1.

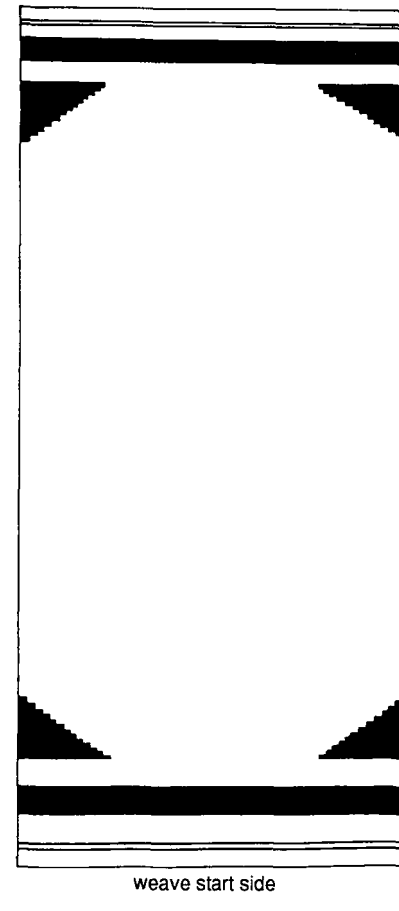


Fig. 10 Well-preserved rug with four corners (Textile 24, Specimen IV-MK-1382).

The result of identification is that Textile 24 takes the dimensions of 297.0 × 138.5 cm, which is approximate to its original size (Fig. 10). As for its design, there are triangles with 13 steps' staircase-like oblique sides woven at four corners each, up and down; right and left (one of which is defective). And a selvage is located along a side of triangle. The border decoration of Textile 24 is composed of two wider knotted lines each placed outside of the triangles, and two narrow lines each arranged further on the non-pile edge band (Figs. 9, 10). In the meantime, at the weave start side, Textile 1 from Cave

C-16 (Specimen No. V-79-5) arranges a plain weave unknotted edge band of different colors of stripe patterns [Fujii and Sakamoto, 1990: p. 52, p. 61, Pl. 1a], while Textile 5 (Specimen No. V-62-3), double-faced pile textile, arranges an unknotted checkered border [ibid.: pp. 54, 63, Pl. 3d]. Moreover, as for Specimen No. C-04-3 from Cave F-6, Hill A, double-faced pile textile, a series of square pattern of different colors are designed along the selvage as border decoration [ibid.: p. 51, Pl. 1b]. On the other hand, Textile 24 has the dark red of knotted wider lines working as border. This knotted wider line is probably the forerunner of later knotted border or "kufesque" decorations [Fujii and Sakamoto, 1993: p. 43] and it also seems that such a basic design composition of field, corner and border arrangements is reflected in carpet designing of later years [Fujii and Sakamoto, 1993: pp. 35-46].

(2) Weave structure

Light reddish yellow and yellowish brown sheep's grandrelle threads as warps are used at random in the light reddish yellow warps. Deep reddish orange and brownish gold threads are passing at random as ground wefts. There, we see some discolored portions presumably coming from traces of having been buried on (See Matsumoto, this volume: pp. 299–310). It has a plain weave ground whose pile threads are knotted with Type B-1 (open to the right) (Fig. 13). The triangles employed as design use dark red wefts. Their oblique sides are of staircase forms, whose contact portion with the light reddish yellow weft of ground takes dovetailed tapestry-weave technique. Also, pile threads of the same color as the ground threads are knotted for the triangle-making. In this way, it is because clear representation effect was aimed at the pattern portion that the same color was used for the pile threads and the ground threads. These triangles are symmetrically worked in, but they differ in size. The wider lines placed outside the triangles are also dark red, where pile threads of the same color are knotted. This specimen has pile unknotted edge bands at the weave start and the weave finish, where two narrow lines are ruuning with the use of dark red wefts. The length between the knotted wider line and non-pile narrow line and the interval between the two lines are all different at the weave start and the weave finish in dimensions.

It is probable that two weavers worked at weaving this pile textile. For we see the evidence of one wefts' turning point halfway from one side without going from one side to the other on the ground plain weave portion. The presumption is that the difference in weft density, resulting from the difference in beating strength, brought about difference in right and left lengths in the course of weaving work, by which surplus wefts were added to the shorter length. There are not any weave start or weave finish left behind, but there remain right and left selvages. They are the reinforced selvages of Type 2, right side of which uses 3.2 cord, while left side, 4.2 cord. The difference in cord arrangement like this will also offer evidence that this rug was woven by two weavers.

The pile tufts used here are comparatively long, with no traces of their cutting or trimming. The pile threads' knotting row with an interval of 1.0-1.8 cm each makes the specimen a rough finish compared with the finish of the carpets of these days.

Textle 25–1 Simple pile textile. Representative Specimen No.IV-MK-335.

This is a rug whose warps, wefts and pile threads are all the same in color. It consists of many fragments, the largest of which is 22.8 × 29.6 cm (IV-MK-335) in size. The pile threads are knotted together with Type B-2 (identical to Type B-2, Fig. 13) with an interval of 1.1–1.4 cm in vertical direction. But now most of the pile tufts have been lost. There are some fragments with selvages, whose warp number used for a pair of cords is different: one is 3.2, whereas the other is 2.2. Judging from the obverse, the reverse, and up and down directions of the pile knotting, the former corresponds to the left side of the rug, while the latter, the right side of the rug.

Textile 25–2 Simple pile textile. Representative Specimen No. IV-MK-1209.

Textile 25–3 Simple pile textile. Representative Specimen No. IV-MK-1436-11.

These specimens closely resemble Textile 25–1 in appearance, though their warp diameter and

density are different from those of Textile 25–1 in numerical value. Even if it is a single rug, there are many examples of its having different warp diameters and densities partially observed so far. Thus, it seems likely that the specimens 25–1, 25–2 and 25–3 belong to the same rug.

Textile 26 Rush mat with checker-like border decoration. Representative Specimen No. IV-MK-1408.

As written in Prof. Ken Matsumoto's excavation report, this specimen was uncovered from among the undermost sand layer inside cave, placed nearly horizontal at the lowest under the following burial items which had been lying from bottom to top in order: a) a pile textile whose field is knotted with deep reddish orange pile tufts (Textile 24: Specimen IV-MK-1382-1, -2, -3, -4, Size: 297.0 × 138.5 cm, the corners of which are decorated with staircase patterns, with its border decoration consisting of a wide pile-knotted band pattern and two slender pile-unknotted stripe patterns), b) a large plain weave dull reddish yellow cloth (Textile 19: Specimen IV-MK-1344, Size: 91.0 × 66.0 cm), c) a large cloth resembling Textile 19 in color and weave structure (Textile 18: Specimen IV-MK-1343, Size: 116 × 183 cm), d) a variation of plain weave cloth with dark red horizontal band (Textile 3: Specimen IV-MK-1342-1, -2, Size: 9.7 × 8.3 cm), e) lastly a human body. And all of them were found covered with a tanned skin (Specimen IV-MK-1341) [Fujii ed., 1980: pp. 157–167]. This is estimated to be the most typical of all the burial methods followed inside at-Tar Caves.

To give more explanation of the above situation, Textile 26 is a mat having been laid lowest under all the others including a human body, thus resulting in suffering its decomposition all over. So it was extremely difficult for us to remove the very item without damage out of its underlying sand layer. Moreover, we thought that complete removal of the sand from the item and its complete cleaning would cause great damage to its preservation. This is why we decided to determine the properties of Textile 26 by comparatively examining its similar data such as Textile 51 from Cave C-16, Hill C and Specimen C-37-4 from Cave F-6, Hill A as data for comparison [Fujii, Sakamoto, Ichihashi, Sadahira and Fibers & Textiles Laboratories, TORAY Industries, Inc., 1991: pp. 157–165, Pls. 1–4], while conducting a minimum of cleaning and sand removal off the cloth to understand its properties.

In Textile 26, we see a pale yellow yarn and a dark brown yarn plied into a single grandrelle thread for warp, which is made into a triple warp thread in parallel, with which a thick rush for weft has been interlaced to weave a rush mat (Pl. 3b, c).

(1) First of all, in order to make the mat face with rush, a triple thread in parallel is used for warp here. We would like to introduce again the reason for it just as given in Fujii and others' report, 1991, p. 158: "The use of the technique that a set of triple warp threads is arranged in parallel for the warp is probably because the weaver must have sought for toughness to be secured on the rush mat of one's own making in order to use it as a rug or the like. Moreover, one may have paid attention to the following things: If a plain weave is done by putting the rush weft in high density into a single warp, it will make the mat face liable to damage with the rush refracting angle getting sharper. Hence, to avoid this, the method of triple warp threads placed in parallel will lead to the decrease in repetition of the warp-and-weft crossings, thereby resulting in the decrease in the rush refracting angle. And the mat face will get smoother (Fig. 11, Pl. 3b)."

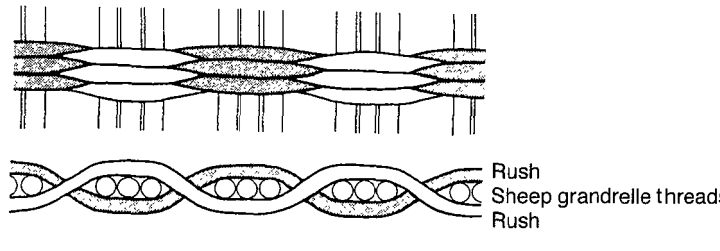


Fig. 11 Textile 26, Specimen IV-MK-1408.

(2) In the second place, a single grandrelle thread for warp use has been made from plying together a pale yellow yarn and a dark brown yarn. Material analysis reveals that the pale yellow yarn is from sheep and the dark brown yarn is also from sheep. The warp's grandrelle thread used in Textile 51 (Rush mat with checker design) from Cave C-16 is the one of plying together sheep yarn and cashmere goat yarn. Grandrelle thread has been frequently used for the warps of pile textiles, too. Grandrelle yarn means a plied yarn where a single yarn of different quality is twisted together with the other. Besides, it has been concluded by the fiber analysis recently conducted by the Toray Industries, Inc. that a plied yarn composed of same quality but of different colors can also be included in this category [Fibers & Textiles Laboratories, Toray Industries, Inc., 1990: pp. 69–92]. In today's Iraqi daily life, we see the Iraqi people use rush mats and pile textiles placed on the floor. It is thus considered from this that the people of those days there used to produce such pile textiles or rush mats for rug or the like to spread them on the earth floor just as today. As far as they are the rugs to spread them on the floor, warp's toughness is required above all to be durable enough for the thickness of wefts beaten in high density. Quite naturally, therefore, two to three-parallel warps should be more desirable than a single warp each. What is more, size change caused by warp's elasticity and de-shaping should be minimized. In consequence, we think that there arose the need of devising grandrelle thread by plying together some beast yarns which are different in fiber qualities. It seems to us that the production of the warp's grandrelle thread by twisting the yarn of different color but of the same quality beast fiber was probably due to the device adopted by the weaver as the last resort since the yarns of different color and different quality were not accidentally kept on hand. Thus, it can safely be said from the above that Textile 26 applies to this case as it uses the grandrelle threads made of twisting together the sheep yarns of different colors. And also in pile textiles, we can notice the similar evidence with the above. In fact, Textile 24 uses different colors of sheep yarn for its warps' grandrelle threads, and Textile 1 from Cave C-16 (Specimen V-79-5, V-90-1) uses the same kind of sheep yarn for warp's grandrelle thread where different colors of pale reddish yellow yarn and dark brown yarn have been twisted together [Fujii and Sakamoto, 1990: p. 52, pp. 60–61, Pl. 1a; Fibers & Textiles Laboratories, TORAY Industries, Inc., 1990: p. 70]. For reference, we would like to explain again general differences of fiber qualities between sheep fiber and the other beast fibers such as normal goat, cashmere goat, camel and alpaca fibers as follows: "As for the sheep fiber, crimps are more remarkably visible, thereby making it more elastic and larger in milling because of its more crenated scale shape in longitudinal view, where change in size is more apt to occur, accordingly. As for the other beast fiber, on the other hand, crimps are less remarkably visible, thereby making it less elastic and smaller in milling because of its more flattened scale shape, where change in size hardly occurs, accordingly. The predominant use of the grandrelle thread evidenced in the warp threads of pile textiles and rush mats may have been firstly because of the necessity required for warp toughness. At the same time, with a view to realizing their combining effects onto a single plied yarn, the ancients probably intended to make better use of such excellent properties as the toughness and less milling of camel, cashmere and alpaca fibers in order to make up for the milling caused by sheep's scales" [Fujii and Sakamoto, 1990: p. 48].

(3) At the portion supposedly very close to the border of the rush mat, there is a row of checker-like pattern which consists of about 1.0 cm each in warp direction and in weft direction woven with the use of 7 pale beige plying threads (sheep) and 7 dark grayish brown plying threads (normal goat) each by turns (Fig 12, Pl. 3c). And above and below the pattern portion, there are two dark grayish brown threads running in weft direction, functioning as borders with the rush wefts, thereby finishing the pattern as band pattern. Textile 15 from Cave C-16 and Specimen C-37-4 from Cave F-6 have the band patterns of this kind woven exactly close to the weave start and weave

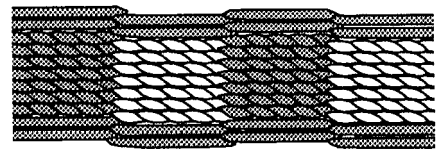


Fig. 12 Row of checker-like pattern (Textile 26, Specimen IV-MK-1408).

finish. Moreover, they remain as checker patterns repeatedly woven in several rows in warp direction. Deduced from these examples, Textile 26 has been determined to be a mat with simple checker-like pattern border decoration.

(4) The confusion surrounding the decomposed corpse was too large to identify the selvage, weave start or weave finish of this specimen.

Discussion

Of all the thirty textiles unearthed from Cave C-17, it may be said that only the textiles discovered with the burial of the skull-less bent human body around its burial place were nearly in the original state of preservation. Nervertheless, our work of identifying the textiles into a single cloth each was indeed laborious owing to their increasing deterioration and fragmentation. In particular, at the burial place where three skulls have been unearthed, we found the textiles, broken to tiny pieces in messy state, scattered here and there, which kept continuing up to the sand deposits where the bent human bone was discovered, without intermission. Deduced from the above, we can evidently learn that the burial place of the skull-less bent body had been disturbed after its burial. Thus, we understand that the textiles from Cave C-17 contain many ones which must be taken up as a single textile in spite of their being small pieces, different from those uncovered from Cave C-16 and Cave C-12. And we notice such cases as include no conclusive evidence in identifying their patterns, thus resulting in the need of adding presumption to judgment, while resorting to the analytical results of the data already obtained in the results of Cave C-16 and Cave C-12.

1. Materials:

Cave C-17 has yielded 5 cotton textiles mixed among the sheep fiber and other beast fiber textiles, just as in Cave C-16. Of the five items, four are cotton textiles with checker pattern, and only one is a simple cotton textile with no pattern,. It differs from Cave C-16 in that Cave C-16 has all five simple ones without patterns.

As already mentioned in the description of cotton specimens, there are such differences in the twist direction of the yarns used for warps and wefts between Cave C-17 and Cave C-16 as given below (Refer to *al-Rāfidān* Vol. XVII, p. 158):

		Warp	Weft
Cave C-16:	Textile No. 46 (V-47-2), No. 47 (V-79-1), No. 49 (V-116-1), No. 50 (V-65-8)	Z-twist	Z-twist
	Textile No. 48 (V-47-9)	S-twist	Z-twist
Cave C-17:	Textile No.21 (IV-MK-446, -476-1, -372) -Checker textile	Z-twist	Z-twist
	Textile No. 22 (IV-MK-515)-Checker textile	S-twist	S-twist
	Textile No. 23 (IV-MK-762)	S-twist	Z-twist

From the above table, it has been undrstood that the cotton textiles from Cave C-17 and Cave C-16 using Z-twist for both warp and weft are the majority seven; both the caves have one textile of S-twist warp and one textile of Z-twist weft, respectively; on the contrary, there is no case in which warp is Z-twist and weft is S-twist, and Cave C-17 has one example of S-twist for both the warp and weft use. What should we learn from the above phenomenon? Indeed, it is probably the matter of subject for study in connection with fine or rough making of the weave structures as to individual products. We wonder whether or not this is caused by the fiber's natural spiral direction of the cotton inherent in its native land, or this has any connection with regional or racial differences with which it has occurred. At all events, we think that the problem of cotton yarn's twist direction must be examined further with some examples coming from other areas as comparative data.

To supply the following for reference, fiber analyses attempted by Fibers & Textiles Laboratories,

Toray Industries, Inc. on Textile 21-1 (IV-MK-446), Textile 21–3 (IV-MK-372), Textile 22 (IV-MK-515) and Textile 23 (IV-MK-763) reveal that all of the fiber structures are roundish in cross-sectional view, thus approximating to indian cotton in quality (pp. 350–351 of this volume). In addition, fiber analyses done by the said laboratories show that the queens' clothes, which were discovered inside the sarcophagus in the tomb chamber, 5 m below the ground, Room 49 of N. W. palace of Assurnasirpal II in Nimrud, have been made of cotton and linen and that the cotton is indian cotton [Fibers & Textiles Laboratories, Toray Industries, Inc., 1996: pp. 199–200, Pls. 1–6]. In this regard, attention should be paid to these specimens as examples of cotton textiles unearthed in Iraq in classification studies.

2. Design and weaving:

Among the non-pile textiles from Cave C-17, the large checker textile with border decoration, Textile 2 (Representative Specimen IV-MK-1362-1) is really well worth the attention in respect to quality and design composition. Textile 2 has been unearthed on and around the upper half of the skull-less bent body in a mass. Here, the thin checker ground has been woven by using dull reddish yellow threads and vivid yellowish red threads, and, in addition, geometric, dotted and floral pattern bands as border decorations are running in warp and weft directions on the checker ground by tapestry-weave technique. The pattern motif depicted there looks like that of Textile 40 from Cave C-16, and also the warp shifting method from checker ground to pattern band is common to the warp arrangement we see in Textile 41 from Cave C-16 [Fujii, Sakamoto and Ichihashi, 1996: pp. 154–155, Pls. 8, 9a].

As for the specimens from Cave C-17 which can be certainly identified as those including H-shape pattern, we had to refrain from defining so, because we were not able to confirm the notched parts of the H-shape patterns traceable upon which our judgment is depending as decisive point. Instead, they were defined as textiles with horizontal band pattern (Textile 3, Textile 7). But the pattern we see in Textile 4 (IV-MK-1123-1) has been regarded as the H-shape pattern end since it is a pattern piece which is comparable with the notched part of the H-shape pattern in Textile 10 from Cave C-16 (V-71-4b). In addition to the above pattern, Textile 4 has a small weave mark woven by Soumak technique, which is frequently evidenced in Coptic textiles. So this is the specimen worth investigating more thoroughly as to its weave technique, together with the research of other data uncovered at some other areas.

Cave C-16 has uncovered not only 5 textiles with H-shape patterns [Fujii, Sakamoto and Ichihashi, 1993: pp. 109–133, Pls. 1–6] but also 3 textiles with human figured patterns [Fujii, Sakamoto and Ichihashi, 1994: pp. 77–89, Pls. 1–10] together with the former. In the meantime, Cave C-17 has yielded only one fragmentary human image with earring (Textile 1, Registered No. IV-MK-1360). This is a specimen of a fragmentary human image large part of whose face has gone. From the motif of its remaining ear and shoulder portions, however, it proves that Textile 1 is the same as the motifs of Textile 14 from Cave C-16 (Registered No. V-132) and Textile 16 from Cave C-16 (Registered No. V-44-10), thus making us think that they were the ones produced by an identical technique in common workshops [Ibid.: pp. 82–83]. Although we failed to seek out what kind of textile the emblem, Textile 1 from Cave C-17, a fragmentary human image, had once been sewn to, we can presume that Cave C-17 had certainly contained the textiles with H-shape pattern, too, judging from the evidence of human image pattern, because we find Cave C-16 giving us 3 textiles with human image pattern and 5 textiles with H-shape pattern together. To our regret, however, as already referred to, the data uncovered from Cave C-17 are too fragmentary for us to obtain decisive information from them.

The color gradated horizontal band pattern described in Textile 6 from Cave C-17 resembles Textile 2 from Cave C-12 (Specimen T-103) in representation of the color gradation and weave technique [Fujii, Sakamoto and Ichihashi, 1989: pp. 122–123, Pl. 27]. And the gauze-like fragments with band pattern, Textile 8, is very similar to Textile 42 from Cave C-16 in color and warp and weft diameters, and in the technique of weaving band pattern on gauze-like ground, both of which are the products comparable with Textile 16 from Cave C-12.

There are four pile textiles in Cave C-17, of which the pile textile with triangles woven at its four corner grounds by dovetailed tapestry-weave technique, Textile 24 (Specimen. IV-MK-1382-1, -2) is the one whose excavated place can be identified relative to the buried human body. Here, we see the dark red pile threads knotted on the same color of triangle patterns on the ground, which gives us an outstanding effect on the corners. Cave C-16 has uncovered eight pile textiles, among which Textile 8 (Specimen V-116-3) has a staircase pattern woven by dovetailed tapestry-weave technique on the reddish brown corner ground or so [Fujii and Sakamoto, 1990: p. 51, pp. 55–57, p. 65, Pls. 2a, b]. In this case, it is uncertain whether or not the same color of pile tufts had been knotted there, because we see them already lost. Speaking of pattern motif, however, we can point out the similarity between Textile 24 from Cave C-17 and Textile 8 from Cave C-16. Moreover, regarding the knotting types of the pile textiles uncovered from Cave C-17, there are 1 specimen of Type B-1 and 3 specimens of Type B-2 coexistent with one another. Type B-1 from Cave C-17 is the first discovery in Hill C, and none of Type B-1 have been found from the other two caves (C-12, C-16). The rug, Textile 24 with pile knotting method of Type B-1 (Specimen IV-MK-1382-1, -2), bears the characteristics of staircase patterns designed at its four corners of the ground by dovetailed tapestry-weave technique and of knotted and unknotted pile horizontal bands running in parallel as border design. In this regard, we must pay attention not only to the design but also to the knotting type worked out for the very rug.

In addition, it is remarked about the pile knotting types that Cave C-12 has 1 specimen of Type A-2; Cave C-16 has 1 specimen of Type A-1, 2 specimens of Type A-2, 2 specimens of Type B-2 and 1 specimen of Type C, all of whose knotting types are clearly traceable; and Cave C-17 does not have Type A-2 which we regard as peculiar to at-Tar, nor does Type A-1, but the discovery from Cave C-17 is limited to Type B-1 and Type B-2. This fact also needs careful attention. The characteristics of Type A-2 knotting have been clarified in the following report through those of individual pile knotting methods (Pile knotting type, Fig. 13) [Fujii and Sakamoto, 1990: pp. 49–51, 57–58; 1993: pp. 41–45].

Type B-2 can often be found in the archaeological carpets from Nubia and Egypt. In this connection, the weaving technique similar to that of Soumak weave from Cave C-17 (Textile 4, Specimen. IV-MK-1123-3) has been discovered from among Coptic textiles and the objects dating back to about 6–7th centuries A.D., in Akoris, Middle Egypt, and the above two techniques can be seen among the specimens uncovered in Dura-Europos, too [Pfister and Bellinger, 1945: Figs. G and N in pl. XXXIII]. The evidence of both the discoveries from Cave C-17, pile knot Type B-2 and Soumak weave, will, therefore, add special interest in pursuit of the intricate culture complex of the textiles uncovered from at-Tar Caves.

The rush mat with checker-like border decoration, Textile 26 from Cave C-17, is similar to Textile 51 from cave C-16 in weave structure and design composition. We would notice that the technique adopted by the production groups of that day has been used up to the present by means of the two textiles.

The textiles uncovered from at-Tar Caves are generally common in the adoption of spinning the threads of regular diameter. For example, in the plain weave fragment with the use of superfine threads, Textile 12 (Specimen IV-MK-1428), very fine threads coming from spinning with no irregularity in diameter have been used for warp and weft. Such weave technique as finished into the one of rustling touch will probably be typical of the at-Tar textiles, we might say. On the contrary, as we sometimes pointed out in the specimens from Cave C-17, the technique of sewing the cloth pieces together may be commented most awkward of all the techniques applied to at-Tar specimens.

The burial textiles from Cave C-17 are nearly common in their design and weaving features with the burial textiles from Cave C-16 and Cave C-12, in that Cave C-17 lies next to Cave C-16 and Cave C-12, Hill C. In consequence, when we come to re-examine the specimens from Hill A for the future, we would like to attempt comparative studies between the data from Hill C and those from Hill A. For example, with regard to pile knotting, Hill A has yielded a considerable number of Type A-1 and Type B-2 mixed with Type A-2, whereas Hill C has only 1 yield of Type A-1 from Cave C-16. Also, as for

the human images which seem to have been woven as emblems, it is common in Hill A and Hill C that the human images woven in horizontal direction are accompanied with wavy motifs which are framed at their four sides as border design. In the case of finds from Cave F-6, Hill A, however, we see vertically directed human figures which are surrounded with double frames as border design, between which there are indented geometric motifs right and left and parapet motifs up and down, [Fujii and Sakamoto, 1994: pp. 77–89, Pls. 1–10]. At all events, systematic, comparative studies of combination relationship among individual culture traits evidenced in various excavated textiles will eventually throw light on the culture complex of these at-Tar textiles. And, at the same time, we would like to solve the actual conditions of the culture complex hidden behind the burial textiles from at-Tar caves out of the historical point of view.

According to the presumption as the result of analyses attempted on textiles so far, we can point out that at-Tar textiles bear many resemblances to the human sculptures from Hatra in design composition, as you see in our articles published up to today. In this connection, therefore, we think that some Mesopotamian groups began to adopt the weave technique, design composition, dyestuff and dyeing technique which were introduced to this area in about 2–3 centuries A.D. This is the area lying in the borderland of the Mesopotamian Sourthwestern Desert, which is an important place for traffic open to the East Mediterranean coastal areas and the Gulf areas through the caravan routes cleared along oases and artesian wells. In this way, it seems to us that the adoption and transformation of these techniques had developed into the production of such unique textile culture, after all.

List of Data on Textiles from Cave 17, Hill C

Explanatory notes

The following textile data indicate the analyses based on the research method specified in Chapter I, Textiles from at-Tar Caves Part 1: Cave 12, Hill C 〔*al-Rāfidān* Vol. X, pp. 110–112〕:

1. The textile number (e.g.: Textile 2) indicates an identified series of fragmentary specimens, of which the representative one is best-preserved and most characteristic. And each fragmentary specimen has its own registered number given at the time of its excavation.
2. 'Size' is determined by "the maximum length of warp direction × the maximum width of weft drection".
3. 'Thickness' is given by "Peacock dial thickness gauge, H 0.01–10 mm (OZAKI MFG. Co., Ltd.)".
4. The color of all the textiles is chiefly given to its representative specimen in accordance with 'Jacal color cards 220', following the ones shown in the revised Munsell Table. But, markedly discolored representative specimens are replaced by some other better preserved ones from among fragmentary specimens for naming, if available.
5. 'Thickness, diamter, twist count and thread density' are shown with their minimum-maximum values. 'Diameter' shows the thread diameter measured with the 25-fold magnifer (Monocular 8 × 30, Asashi Pentax).
6. The weft density in the case of two or more wefts used at one shed is indicated as follows: It is shown by the number of shed and the weft number which is passed at a single opening operation. For example, the data description is: (12–14) × 2/cm; the figures in the parentheses show minimum-maximum values at the spots where the frequencies of shed are measured, '× 2' means paired weft; '× 3' means three wefts. And the multiplied value is equivalent to the actual number. In the case of double or more warp threads in parallel, the warp density is indicated as the ones mentioned above.
7. The thread number of selvage cord is so arranged as to start from the selvage edge in regular order.
8. When a selvage or an edge is observed in the fragmentary specimen, its detail and specimen No. are additionally written.
9. The figures and photos shown here all accord with the warp direction, and the textiles with edges and pile knots clearly identified are positioned with their weave finish up and weave start down in warp direction.
10. The description of 'raw material' of beast and cotton fibers entered in the report has conformed to the analytical results of Fibers & Textiles Laboratories, Toray Industries, Inc.
11. The raw material marked with the asterisk * is from the analytical result given by Fibers & Textiles Laboratories, Toray Industries, Inc. (see pp. 350–352, Pls. 1–8 of this volume), while the raw material without any mark on is from our determination based on some analytical data hitherto given by Fibers & Textiles Laboratories, Toray Industries, Inc. 〔1990: pp. 69–79, Pls. 1–13; 1991: pp. 163–165, Pls. 3–4; 1993: pp. 149–150, Pls. 1–2; 1996: pp. 187–189. Pls. 1–4〕 and some others.

Textile 2: Large checker textile with border decoration

Representative specimen:	Registered No. IV-MK-1362-1		
Size (cm):	30.0 × 23.8		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design Variation of plain weave: warp 2, weft 1. weft faced (IV-MK-1362-1, -2a), tapestry -weave technique		
Design:	Ground Checker pattern		
	Pattern Pattern band involving floral, dotted geometric, hook-shaped and line pattern		
Thickness (mm):	Ground 0.576		
	Design 0.917		
	Warp 1 (ground)	Warp 2 (ground)	Weft 1 (ground)
Raw material:	*Sheep	Sheep	*Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	7R 5/14 (vivid yellowish red)	7R 5/14 (vivid yellowish red)
Diameter (mm):	0.2–0.25	0.2–0.3	0.2–0.3
Twist, Twist No. (/cm):	—S (6.0–8.0)	—S (5.0–7.0)	—S (5.0–7.0)
Density (/cm):	14.0–18.0	14.0–18.0	16.0–18.0

	Weft 2 (ground)	Weft (pattern band) (IV-MK-1362-2a)	Weft (geometric, hook -shaped and line patterns) (VI-MK-1362-2a, -2c, -2e)
Raw material:	Sheep	*Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	7.5RP 2.4/5 (dark wine)	4YR 6.5/14 (vivid orange)
Diameter (mm):	0.2–0.25	0.25–0.35	0.3–0.5
Twist, Twist No. (/cm):	—S (6.0–8.0)	—S (6.0–9.0)	—S (3.0–4.0)
Density (/cm):	16.0–18.0	58.0–62.0	58.0–62.0

	Weft (hook-shaped and geometric patterns) IV-MK-1362-2a, -2c	Weft (dotted and floral pattern) IV-MK-1362-2e
Raw material:	Sheep	Sheep
Color:	4R 4.5/14 (vivid red)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.25–0.30	0.30–0.40
Twist, Twist No. (/cm):	—S(5.0–7.0)	—S(3.0–4.0)
Density (/cm):	58.0–62.0	50.0
Selvage:	Type 1; cord 2 (IV-MK-1362-2a, -2e)	
Edge:	Weave finish: fringe type, warp 3–4 (1 cord) —Z / warp 3–4 (1 cord) —Z ⟩— S (dia, 2.00 mm) IV-MK-132-1-a	
Fragmentary specimens:	1362-1 -1-a -1-3d -1-4a -2a -2b -2c -2d -2e -2f -3a -3b -3c -3d -1211 -1212 1358 1375-a 558 1401-2 1170 1121-1 1254 1357-b 1362-2a 1362-2c 1362-2e		

Textile 3: Fragments with dark red horizontal band

Representative specimen:	Registered No. IV-MK-1342-2
Size (cm):	9.7 × 8.3
Structure:	Ground Variation of plain weave: warp 1, weft 2. balanced
	Design Plain weave: warp 1, weft 1. weft-faced, tapestry-weave technique
Design:	Horizontal band (IV-MK-1342-2)
Thickness (mm):	Ground 0.789
	Design 1.640

	Warp	Weft (ground)	Weft (pattern)
Raw material:	Sheep	Sheep	Sheep
Color:	2.5Y 7/10 (gold)	2.5Y 7/10 (gold)	4R 2.4/5 (dark red)
Diameter (mm):	0.32–0.45	0.30–0.40	0.30–0.50
Twist, Twist No. (/cm):	—S (10.0–12.0)	—S (5.0–7.0)	—S (6.0–8.0)
Density (/cm):	9–10	(12–14) × 2	36–40
Selvage:	Type 1; cord 4 · 2 (IV-MK-1342-1-2)		
Fragmentary specimens:	1342-1 1342-1-2 1342-2 1375-1 1355-1 1255 1342-4		

Textile 4: Fragments with H-shape pattern end and with Soumak weave mark

Representative specimen:	Registered No. IV-MK-1123-1		
Size (cm):	13 × 8.5		
Structure:	Ground Variation of plain weave: warp 1, weft 2. weft-faced		
	Design Variation of plain weave: warp 1, weft 2. weft-faced, tapestry-weave technique and Soumak weave technique		
Design:	maybe H-shape pattern (IV-MK-1123-2), Weaving mark: Soumak weave (IV-MK-1123-3)		
Thickness (mm):	Ground 1.30–1.47		
	Design 1.40 (IV-Mk-1123-2), 1.62 (IV-MK-1123-3)		
	Warp	Weft (ground)	Weft (H-shape pattern) (IV-MK-1123-2)
Raw material:	Sheep	Sheep	Sheep
Color:	2.5Y 9/5 (light reddish yellow)	2.5Y 9/5 (light reddish yellow)	4R 2.4/5 (dark red)
Diameter (mm):	0.3–0.4	0.2–0.4	0.25–0.35
Twist, Twist No. (/cm):	—S (7–10)	—S (7–8)	—S (7–10)
Density (/cm):	8–9	(22–26) × 2	26 × 2
		Weft (Soumak weave)	
Raw material:		Sheep	
Color:		4R 2.4/5 (dark red)	
Diameter (mm):		0.35–0.40	
Twist, Twist No. (/cm):		—S (4–5)	
Density (/cm):		immeasurable (paired weft)	
Selvage:	Type 3, cord 3 · 3 · 3 (IV-MK-584, -471), additional thread of 3-prallel wefts		
Remarks:	maybe weave mark (IV-MK-1123-3)		
Fragmentary specimens:	1123-1 1123-2 1123-3 584 471 427 439 378 562 680 512 590 437 485 516 301 679 475 555 669 434 467-16 600-2 983 1021-1 1353 1335-1 1366-2 1434		

Textile 5: Small, medium-thick fragments with pattern

Representative specimen:	Registered No. IV-MK-761
Size (cm):	2.5 × 3.5
Structure:	Ground Plain weave: warp 1, weft 1. balanced
	Design Plain weave: warp 1, weft 1. weft-faced, tapestry-weave technique
Design:	Uncertain (IV-MK-1021-4, -383)
Thickness (mm):	Ground 0.981
	Desgin 1.0

	Warp	Weft (ground)	Weft (pattern)
Raw material:	*Sheep	*Sheep	Sheep
Color:	10R 2/3 (dark reddish brown)	10R 2/3 (dark reddish brown)	2.5Y 6/8 (gold)
Diameter (mm):	0.4–0.6	0.4–0.6	0.25–0.35
Twist, Twist No. (/cm):	—S (8.0)	—Z (7.0)	—Z (10.0)
Density (/cm):	9–10	13–16	36
Remarks:	Paired wefts here and three-parallel wefts there (IV-MK-505, -1021-4)		
Fragmentary specimens:	761 505 1021-4 466-1 394 436 393 305 500 982 394 579 383 430 467 1436-10 478 425 503 406 497 599 511 602 660 561 566 665 573 1390		

Textile 6: Textile with color gradated horizontal band pattern

Representative specimen:	Registered No. IV-MK-1355		
Size (cm):	51.3 × 29.5		
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced		
	Design Plain weave: warp 1, weft 1. weft-faced		
Design:	Color gradation and horizontal band pattern		
Thickness (mm):	Ground 1.08		
	Design 1.12		
	Warp	Weft (ground)	Weft (line pattern)
Raw material:	*Sheep	*Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.35–0.60	0.3–0.60	0.35–0.55
Twist, Twist No. (/cm):	—S (10–12)	—S (3–5)	—S (3–4)
Density (/cm):	6–8	28–34	22
	Weft (pattern 1)	Weft (pattern 2)	Weft (pattern 3)
Raw material:	Sheep	Sheep	Sheep
Color:	4R 3.5/10 (deep red)	7.5RP 2.4/5 (dark wine)	10R 2/3 (dark reddish brown)
Diameter (mm):	0.50–0.70	0.35–0.55	0.50–0.60
Twist, Twist No. (/cm):	—S (2–3)	—S (3)	—S (3)
Density (/cm):	36–40	32	26–32
Selvage:	Type 2; cord 4 · 4 (IV-MK-1356-1)		
Remarks:	Color gradation (pattern 1 → pattern 3), Two selvages are joind together by two-ply yarn, sewing thread $\frac{-S}{-S}$ >— Z (dia 1 mm) (IV-MK-1356-1)		
Fragmentary specimens:	1355 1356-1 1356-4 1348		

Textile 7: Textile with yellowish brown band pattern

Representative specimen:	Registered No. IV-MK-554
Size (cm):	22.0 × 25.0
Structure:	Ground Variation of plain weave: warp 1, weft 2. balanced
	Design Variation of plain weave: warp 2 · 2 · 1 · 1/repeat, weft 1, weft-faced, tapestry-weave technique
Design:	Horizontal band pattern
Thickness (mm):	Ground 0.794
	Design 1.477

	Warp	Weft (ground)	Weft (pattern)
Raw material:	*Sheep	*Sheep	*Sheep
Color:	2.5Y 7/10 (gold)	2.5Y 7/10 (gold)	9YR 4/4 (yellowish brown)
Diameter (mm):	0.25–0.40	0.20–0.40	0.25–0.45
Twist, Twist No. (/cm):	—S (10–14)	—S (8–10)	—S (5–7)
Density (/cm):	13–15	(12–14) × 2	40–42
Fragmentary specimens:	554 *469		

Textile 8: Gauze-like fragments with band pattern

Representative specimen:	Registered No. IV-MK-559, IV-MK-467-2		
Size (cm):	8.6 × 6.7 (IV-MK-559)		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design Valiation of plain weave: warp 2, weft 1. weft-faced, tapestry-weave technique (IV-MK-467-2)		
Design:	Band pattern		
Thickness (mm):	Ground 0.648		
	Design 1.089 (IV-MK-467-2)		
	Warp (IV-MK-559)	Weft (ground) (IV-MK-559)	Warp (IV-MK-467-2)
Raw material:	*Sheep	*Sheep	Sheep
Color:	6PB 2/4 (dark purplish blue)	6PB 2/4 (dark purplish blue)	6PB 2/4 (dark purplish blue)
Diameter (mm):	0.20–0.30	0.20–0.45	0.20–0.30
Twist, Twist No. (/cm):	—S (10–14)	—S (5–8)	—S (8–12)
Density (/cm):	20–21	17–19	(11–12) × 2

	Weft (pattern) (IV-MK-467-2)
Raw material:	*Sheep
Color:	7.5RP 4.5/6 (dull redish purple)
Diameter (mm):	0.20–0.40
Twist, Twist No. (/cm):	—S (8–10)
Density (/cm):	40–44
Selvage:	Type 2; cord 3 · 2 (IV-MK-467-2)
Fragmentary specimens:	559 467-2

Textile 9: Fragments with horizontal stripe pattern

Representative specimen:	Registered No. IV-MK-1128		
Size (cm):	8.6 × 6.7		
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced		
	Design Plain weave: warp 1, weft 1. weft-faced		
Design:	Stripe pattern		
Thickness (mm):	Ground 1.629		
	Design 1.629		
	Warp	Weft (ground)	Weft (pattern)
Raw material:	*Sheep	*Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)	7R 4/10 (deep yellowish red)
Diameter (mm):	0.6–0.9	0.6–1.0	0.6–0.8
Twist, Twist No. (/cm):	—S (1.0)	—Z (1–3)	—Z (1–3)

Density (/cm):	5	16-18	16
	Weft (pattern)	Weft (pattern)	Weft (pattern) IV-MK-1043-1
Raw material:	Sheep	Sheep	Sheep
Color:	9YR 5.5/8	5BG 2.4/3	5GY 6.5/1.5
	(brownish gold)	(dark blue green)	(grayish leaf)
Diameter (mm):	0.6–1.0	0.7–1.0	0.61
Twist, Twist No. (/cm):	—Z (1–3)	—Z (1–3)	—Z (1–3)
Density (/cm):	16	16	14
Selvage:	Type 2; cord 3 · 2 (IV-MK-1043-1), cord 2 · 2 (IV-MK-1043-2)		
Edge:	Weave finish, warp 2 (1 cord) $\frac{-Z}{-Z}\rangle\!\!-$ S (IV-MK-1128)		
Remarks:	3 · 2 cord alignment selvage and 2 · 2 cord alignment selvage are stitched up with sewing thread: $\frac{-Z}{-Z}\rangle\!\!-$ S (dia, 1.2 mm). Paired warps and wefts at random.		
Fragmentary specimens:	1128 1043-1 1043-2 1375-10 1422		

Textile 10: Fragment with stripe pattern band

Representative specimen:	Registered No. IV-MK-2		
Size (cm):	4.8 × 4.7		
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced		
	Design Plain weave: warp 1, weft 1. weft-faced		
Design:	Stripe pattern band		
Thickness (mm):	Ground 1.25		
	Design 1.64		
	Warp	Weft (ground)	Weft (pattern)
Raw material:	Sheep	Sheep	Sheep
Color:	2.5Y 7.5/6	2.5Y 7.5/6	10Y 8.5/9
	(dull reddish yellow)	(dull reddish yellow)	(bright green yellow)
Diameter (mm):	0.4–0.7	0.5–0.6	0.9–1.2
Twist, Twist No. (/cm):	—S (6.0)	—S (2.0–3.0)	$\frac{-Z}{-Z}\rangle\!\!-$ S (2.0–3.0)
Density (/cm):	6–6.5	20–22	10
		Weft (pattern)	
Raw material:		Sheep	
Color:		7R 4/10	
		(deep yellowish red)	
Diameter (mm):		0.9–1.1	
Twist, Twist No. (/cm):		—Z (3.0–5.0)	
Density (/cm):		18	
Fragmentary specimens:	2		

Textile 11: Small stitched-up dark purple fragment

Representative specimen:	Registered No. IV-MK-1210	
Size (cm):	3.0 × 3.7	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 1.050	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6	7.5P 1.5/4
	(dull reddish yellow)	(dark purple)
Diameter (mm):	0.35–0.50	0.25–0.35
Twist, Twist No. (/cm):	—S (7.0–8.0)	—S (3.0)
Density (/cm):	10	32–36
Remarks:	Two pieces are stitched up with sewing plied thread $\frac{-S}{-S}\rangle\!\!-$ Z (dia, 1.0-1.2 mm)	

Fragmentary specimens: 1210 1021-5

Textile 12: Plain weave fragment with the use of superfine thread

Representative specimen:	Registered No. IV-MK-1428	
Size (cm):	32.3 × 8.5	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 0.26-0.35	
	Warp	Weft
Raw material:	*Sheep	*Sheep
Color:	5.5Y 6/8 (olive yellow)	5.5Y 6/8 (olive yellow)
Diameter (mm):	0.12–0.23	0.12–0.23
Twist, Twist No. (/cm):	—S (10.0–14.0)	—S (10.0–14.0)
Density (/cm):	27–34	25–27
Fragmentary specimens:	1428	

Textile 13: Simple, well-balanced fragment of good quality

Representative specimen:	Registered No. IV-MK-433	
Size (cm):	9.2 × 6.4	
Structure:	Ground Variation of plain weave: warp 1, weft 2. balanced	
Thickness (mm):	Ground 1.132	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.6–0.9	0.35–0.6
Twist, Twist No. (/cm):	—S (8.0–10.0)	—S (4.0–5.0)
Density (/cm):	8–9	(8–9) × 2
Fragmentary specimens:	433 498 604-01	

Textile 14: Simple, weft-faced fragment

Representative specimen:	Registered No. IV-MK-707	
Size (cm):	2.4 × 1.7	
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced	
Thickness (mm):	Ground 1.187	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	9YR 5.5/8 (brownish gold)	9YR 5.5/8 (brownish gold)
Diameter (mm):	0.4–0.7	0.35–0.55
Twist, Twist No. (/cm):	—S (6.0)	—Z (1.0–3.0)
Density (/cm):	7–8	36
Fragmentary specimens:	707	

Textile 15: Simple, variation of plain weave fragment

Representative specimen:	Registered No. IV-MK-604-3
Size (cm):	3.8 × 1.4
Structure:	Ground Variation of plain weave: warp 1, weft 2. weft-faced
Thickness (mm):	Ground 1.082

	Warp	Weft
Raw material:	Sheep	Sheep
Color:	9YR 5.5/8 (brownish gold)	9YR 5.5/8 (brownish gold)
Diameter (mm):	0.5	0.4–0.5
Twist, Twist No. (/cm):	—S (4.0)	—Z (2.0)
Density (/cm):	8	16 × 2
Selvage:	Type 2; cord 2 · 2	
Fragmentary specimens:	604-3	

Textile 16: Elaborately woven fragment

Representative specimen:	Registered No. IV-MK-571	
Size (cm):	2.7 × 1.2	
Structure:	Ground Variation of plain weave: warp 1, weft 2	
Thickness (mm):	Ground 0.865	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 3/5 (light reddish yellow)	2.5Y 3/5 (light reddish yellow)
Diameter (mm):	0.25–0.30	0.20–0.30
Twist, Twist No. (/cm):	—S (10.0)	—S (3.0)
Density (/cm):	12	34 × 2
Selvage:	Type 2; cord 4 · 4	
Fragmentary specimens:	571	

Textile 17: Simple, light yellow fragments

Representative specimen:	Registered No. IV-MK-1361	
Size (cm):	16.0 × 23.0	
Structure:	Ground Variation of plain weave: warp 1, weft 2. balanced	
Thickness (mm):	Ground 1.02	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	5.5Y 9/6 (light yellow)	5.5Y 9/6 (light yellow)
Diameter (mm):	0.3–0.4	0.15–0.35
Twist, Twist No. (/cm):	—S (8.0–10.0)	—S (4.0–6.0)
Density (/cm):	7–9	(22–24) × 2
Fragmentary specimens:	1361 1356 1398 1093 1096 659	

Textile 18: Large cloth soiled with decayed corpse

Representative specimen:	Registered No. IV-MK-1343	
Size (cm):	116 × 183	
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced	
Thickness (mm):	Ground 1.453	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.3–0.5	0.4–0.7
Twist, Twist No. (/cm):	—S (10.0)	—Z (1.0–1.5)

Density (/cm):	5–8	36–42
Selvage:	Type 3; cord 4 · 4 · 4, thick additional thread of 3-parallel wefts	
Edge:	Weave finish, warp 2 (1 cord) $\frac{-S}{-S}\rangle$— Z (dia. 2.3 mm)	
Fragmentary specimens:	1343	

Textile 19: Textile with torn strings

Representative specimen:	Registered No. IV-MK-1344 (Textile 19-1)	
Size (cm):	91.0 × 66.0	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 0.947	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.4–0.5	0.5–0.6
Twist, Twist No. (/cm):	—S (8.0–10.0)	—Z (3.0)
Density (/cm):	8–10	9–12
Selvage:	Type 2; cord 3 · 3 · 3 (IV-MK-1367)	
Edge:	Weave finish, warp 2 or 3 (1 cord) $\frac{-S}{-S}\rangle$— Z (dia. 3.0 mm) IV-MK-1368, -1365, -1342-6.	
Remarks:	(1) Specimen IV-MK-1367 (size: 52.7 × (4.8–5.0 cm) with a selvage which seems to have been torn from Specimen IV-MK-1344	
	(2) Specimen IV-MK-1368 (size: 1.2 × 19.0 cm) with a warp finish end, also a piece torn from Specimen IV-MK-1344	
Fragmentary specimens:	1344 1367 1368 1365 1342-6	

Textile 19–2: Torn fragment

Representative specimen No. IV-MK-1367

Size (cm):	52.7 × (4.8-5.0)	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 0.956	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.49	0.58
Twist, Twist No. (/cm):	—S (10.0)	—Z (3.0)
Density (/cm):	12-13	9
Selvage:	Type 2; cord 3 · 3 · 3	
Remarks:	This cloth in the fold of about 0.5-1.0 cm each, discovered as a string-like shape, together with Specimen IV-MK-1344	
Fragmentary specimens:	1367	

Textile 19–3: Torn fragment

Representative specimen No. IV-MK-1368

Size (cm):	1.2 × 19.0	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 1.180	
	Warp	Weft
Raw material:	Sheep	Sheep
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.5–0.6	0.5

Twist, Twist No. (/cm):	—S (5.0)	—Z (2.0)
Density (/cm):	9	14
Edge:	Weave finish, warp 2 or 3 (1 cord) $\frac{-S}{-S}\rangle$— Z (dia. 3.0 mm)	
Remarks:	Maybe used for a string or like that.	
Fragmentary specimens:	1368	

Textile 20: Plain weave, raw wool fragment

Representative specimen:	Registered No. IV-MK-1350-1	
Size (cm):	7.9 × 9.0	
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced	
Thickness (mm):	Ground 0.875	
	Warp	Weft
Raw material:	*Sheep	*Sheep
Color:	5YR 2.4/4 (dark brown)	5YR 2.4/4 (dark brown)
Diameter (mm):	0.3–0.45	0.4–0.55
Twist, Twist No. (/cm):	—S (7.0–10.0)	—S (2.0–3.0)
Density (/cm):	9	28-32
Fragmentary specimens:	1350 1219-4 1172	

Textile 21: Cotton fragments with checker patterns of irregular intervals

Representative specimen:	Registered No. IV-MK-446 (Textile 21-1)		
Size (cm):	22.3 × 21.3		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design Plain weave: warp 1, weft 1. balanced		
Design:	Parapet-like motif checker pattern		
Thickness (mm):	Ground 0.929		
	Design 1.143		
	Warp (ground)	Weft (ground)	Warp (pattern)
Raw material:	*Cotton	Cotton	Cotton
Color:	2.5Y 7/10 (gold)	2.5Y 7/10 (gold)	10G 2.4/3 (dark bluish green)
Diameter (mm):	0.20–0.70	0.20–0.70	0.35–0.60
Twist, Twist No. (/cm):	—Z (6.0–8.0)	—Z (6.0–8.0)	—Z (6.0–8.0)
Density (/cm):	12–13	9–10	11
	Weft (pattern)		
Raw material:	*Cotton		
Color:	10G 2.4/3 (dark bluish green)		
Diameter (mm):	0.30–0.80		
Twist, Twist No. (/cm):	—Z (6.0–8.0)		
Density (/cm):	10		
Selvage:	Type 1; cord 3 (IV-MK-446)		
Edge:	$\frac{-Z}{-Z}\rangle$— S, $\frac{-Z}{-Z}\rangle$— S ⟩---- Z? (IV-MK-396)		
Remarks:	Square checker pattern: 3.0 × 3.0 cm. Two pieces each were sewn together by grandrelle thread $\left(\frac{-Z}{-Z}\rangle\text{— S, dia. 0.8 cm}\right)$ IV-MK-446.		
Fragmentary specimens:	446 417 396 593 391-1		

Textile 21–2: Cotton fragments with checker patterns of irregular intervals

Representative specimen No. IV-MK-476-1

Size (cm):	9.0 × 6.5		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design Plain weave: warp 1, weft 1. balanced		
Design:	Parapet-like motif checker pattern		
Thickness (mm):	Ground 0.94		
	Design 1.20		
	Warp (ground)	Weft (ground)	Warp (pattern)
Raw material:	Cotton	Cotton	Cotton
Color:	2.5Y 7/10 (gold)	2.5Y 7/10 (gold)	10G 2.4/3 (dark bluish green)
Diameter (mm):	0.50–0.60	0.40–0.60	0.51
Twist, Twist No. (/cm):	—Z (5.0–7.0)	—Z (5.0–7.0)	—Z (5.0–7.0)
Density (/cm):	7–8	9	6–7
	Weft (pattern)		
Raw material:	Cotton		
Color:	10G 2.4/3 (dark bluish green)		
Diameter (mm):	0.45		
Twist, Twist No. (/cm):	—Z (5.0–7.0)		
Density (/cm):	7–8		
Remarks:	Squares of checker pattern: 3.5 × 3.5 cm		
Fragmentary specimens:	377 476-1 484 501 663 838 764 365-5 417 1447		

Textile 21–3: Cotton fragments with checker patterns of irregular intervals

Representative specimen No. IV-MK-372

Size (cm):	12.4 × 18.1		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design Plain weave: warp 1, weft 1. balanced		
Design:	Parapet-like motif checker pattern and stripe pattern		
Thickness (mm):	Ground 1.143		
	Design 1.30		
	Warp (ground)	Weft (ground)	Warp (pattern)
Raw material:	*Cotton	Cotton	Cotton
Color:	2.5Y 7/10 (gold)	2.5Y 7/10 (gold)	10G 2.4/3 (dark bluish green)
Diameter (mm):	0.30–0.70	0.30–0.70	0.50–0.90
Twist, Twist No. (/cm):	—Z (5.0–7.0)	—Z (5.0–7.0)	—Z (5.0–7.0)
Density (/cm):	9–10	8	16–17
	Weft (pattern)		
Raw material:	*Cotton		
Color:	10G 2.4/3 (dark bluish green)		
Diameter (mm):	0.50–1.00		
Twist, Twist No. (/cm):	—Z (5.0–7.0)		
Density (/cm):	9		
Selvage:	Type 1. (IV-MK-372), The selvage of specimen IV-MK-372 sewn together with another fragment with its stitching thread, cotton grandrelle thread, —Z/—Z S (dia, 1.3 mm)		
Edge:	Fringe: —S/—S Z, —S/—S Z S (IV-MK-577), —S/—S Z, —S/—S Z, —S/—S Z S (IV-MK-467-12)		

Remarks:	Squares of checker pattern: 5.0 × 5.0 cm
Fragmentary specimens:	372 467-12 477 476-2 577 424 474 569 504-1 600-1 419 402 643-2 1173 1375-6 392 1436-3 483 489 466-6 666

Textile 22: Checker textile composed of dull reddish yellow and yellowish brown cotton threads

Representative specimen:	Registered No. IV-MK-515		
Size (cm):	7.0 × 3.4		
Structure:	Ground Plain weave: warp 1, weft 1. balanced		
	Design: Checker pattern		
Thickness (mm):	Ground 0.702		
	Warp (1)	Warp (2)	Weft (1)
Raw material:	Cotton	*Cotton	*Cotton
Color:	2.5Y 7.5/6 (dull reddish yellow)	9YR 4/4 (yellowish brown)	9YR 4/4 (yellowish brown)
Diameter (mm):	0.30–0.45	0.30–0.45	0.30–0.45
Twist, Twist No. (/cm):	—S (10.0–12.0)	—S (10.0–12.0)	—S (10.0–12.0)
Density (/cm):	16.0–18.0	16.0–18.0	12.0
		Weft (2)	Weft (4)
Raw material:		Cotton	
Color:		2.5Y 7.5/6 (dull reddish yellow)	
Diameter (mm):		0.30–0.45	
Twist, Twist No. (/cm):		—S (10.0–12.0)	
Density (/cm):		12.0	
Fragmentary specimens:	515		

Textile 23: Simple cotton fragment

Representative specimen:	Registered No. IV-MK-762	
Size (cm):	8.7 × 6.0	
Structure:	Ground Plain weave: warp 1, weft 1. balanced	
Thickness (mm):	Ground 0.653	
	Warp	Weft
Raw material:	*Cotton	Cotton
Color:	2.5Y 7.5/6 (dull reddish yellow)	2.5Y 7.5/6 (dull reddish yellow)
Diameter (mm):	0.25–0.45	0.25–0.6
Twist, Twist No. (/cm):	—S (10.0–12.0)	—Z (9–12)
Density (/cm):	14–15	11–12
Selvage:	Type 1 (IV-MK-678)	
Remarks:	The evidences of two warp-connecting portions are in Specimen IV-MK-763, -678.	
Fragmentary specimens:	762 *763 423 678 499 699 422 410-2 1021 609 342 672 645-1 606 461-1 837	

Textile 24: Pile textile with staircase pattern

Representative specimen:	Registered No. IV-MK-1382-1		
Size (cm):	297.0 × 138.5		
Structure:	Ground plain weave: warp 1, weft 1. weft-faced		
	Design plain weave: warp 1, weft 1. weft-faced, dovetailed tapestry-weave technique		
	Pile knot: B-1 type open to the right		
Design:	Staircase pattern (ground corner) and stripe patterns (border decoration)		
Thickness (mm):	Ground	2.00–2.50	5.28–6.11 (with pile tufts)

	Warp (1)	Warp (2) grandrelle thread	Weft (1)	Weft (2)
Raw material:	Sheep	*Sheep	Sheep	Sheep
Color:	2.5Y 9/5 (light reddish yellow)	2.5Y 9/5 (light reddish yellow) *Sheep 9YR 4/4 (yellowish brown)	10R 4.5/10 (deep reddish orange)	9YR 5.5/8 (brownish gold)
Diameter (mm):	1.0–1.2	1.0–1.2	1.0–1.3	1.0–1.5
Twist, Twist No. (/cm):	—Z —Z >— S (3.5–4.0)		—Z (2.0)	—Z (2.0)
Density (/cm):	3.5–4.7		13.0–20.0	

	Weft (3)	Pile (1)	Pile (2)
Raw material:	Sheep	*Sheep	Sheep
Color:	4R 2.4/5 (dark red)	10R 4.5/10 (deep reddish orange)	4R 2.4/5 (dark red)
Diameter (mm):	0.9–1.0	1.5–2.0	2.0
Twist, Twist No. (/cm):	—Z (2.0)	S S >— Z (2.5)	S S >— Z (2.5)
Density (/cm):	13.0–20.0	(7.7–8.0) × (20.0–22.0) Pile knot/dm	

Selvage: Type 2, cord: 3 · 2 right side (IV-MK-1382-1 / IV-MK-1382-2), 4 · 2 left side (IV-MK-1382-1, IV-MK-1382-4)

Remarks: Longest pile thread 5.5 cm, Space of pile knotting row 1.0-1.8 cm

Fragmentary specimens: 605 658 668 1163 1169 1191-2 1215 1219-1 1356-3 1375-4 1382-1 1382-2 1382-3 1382-4 1400-3 1401-1 1403-1 1404-1 1415-1 1418-4

Textile 25–1: Simple pile textile

Representative specimen: Registered No. IV-MK-335

Size (cm): 22.8 × 29.6

Structure: Ground Plain weave: warp 1, weft 1. weft-faced

Pile knot: B-2 type open to the left

Thickness (mm): Ground 2.10–3.10 4.38 with pile tufts

	Warp	Weft	Pile
Raw material:	Sheep	Sheep	*Sheep
Color:	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)
Diameter (mm):	1.1–1.4	0.7–1.0	1.7–2.5
Twist, Twist No. (/cm):	—Z —Z >— S (3.0–4.0)	—Z (2.5–3.0)	—Z —Z >— S (immeasurable)
Density (/cm):	3.4–3.6	24.0–26.0	8.0 × 17.5 (Pile knot/dm)

Selvage: Type 2; cord (2 · 2 right side) IV-MK-435, IV-MK-1199, (3 · 2 left side) IV-MK-382

Remarks: Space of pile knotting row 1.1–1.4 cm

Fragmentary specimens: 345 371 426 431 435 518 595-1 1044 1392 1434-1 335 336 338 341 382 401-1 428 502 557 562-1 564 653-1 682 1199 1200 1207 653-4 1021-8

Textile 25–2: Simple pile textile

Representative specimen: Registered No. IV-MK-1209

Size (cm): 3.5 × 5.2

Structure: Ground Plain weave: warp 1, weft 1. weft-faced

Pile knot: B-2 type open to the left

Thickness (mm): Ground 2.84–3.09

	Warp	Weft	Pile
Raw material:	Sheep	Sheep	*Sheep
Color:	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)
Diameter (mm):	1.2–1.5	0.6–0.7	1.4–1.6
Twist, Twist No. (/cm):	—Z/—Z S (2.0)	—Z (3.0)	—Z/—Z S (2.5)
Density (/cm):	3.2	23.0	immeasurable
Fragmentary specimens:	404 514 1079 1080 1209		

Textile 25–3: Simple pile textile

Representative specimen:	Registered No. IV-MK-1436-11		
Size (cm):	4.9 × 2.2		
Structure:	Ground Plain weave: warp 1, weft 1. weft-faced		
	Pile knot: B-2 type open to the left		
Thickness (mm):	Ground 2.00–2.42		
	Warp	Weft	Pile
Raw material:	Sheep	Sheep	*Sheep
Color:	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)	2.5Y 6/8 (gold)
Diameter (mm):	0.8–1.1	0.7–0.8	1.3
Twist, Twist No. (/cm):	—Z/—Z S (2.5)	—Z (2.5)	—Z/—Z S (2.0)
Density (/cm):	4.0	26.0	8.0 × 20.0 (pile knot/dm)
Selvage:	Type 2; cord 3 · 2 (IV-MK-395)		
Remarks:	Space of pile knotting row 1.3–1.5 cm		
Fragmentary specimens:	339-1 395 444 479 1379-1 1436-11		

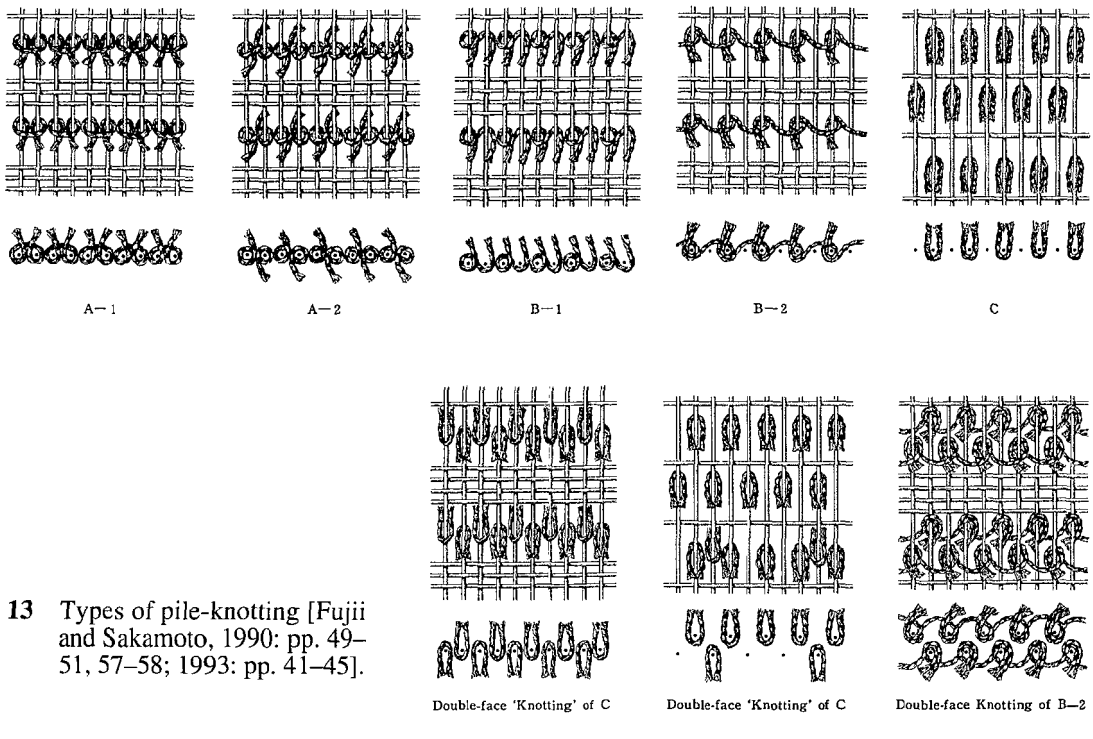


Fig. 13 Types of pile-knotting [Fujii and Sakamoto, 1990: pp. 49–51, 57–58; 1993: pp. 41–45].

Textile 26: Rush mat with checker-like border decoration

Representative specimen:	Registered No. IV-MK-1408		
Size (cm):	310.0 × 142.0		
Structure:	Ground Variation of plain weave: warp 3, weft 1. weft-faced		
	Design Variation of plain weave: warp 3, weft 1. weft-faced		
Design:	Checker-like border decoration		
Thickness (mm):	Ground 4.10–4.83		
	Design 4.46–4.62		
	Warp (grandrelle thread)		Weft (ground)
Raw material:	*Sheep	*Sheep	Rush
Color:	5.5Y 9/3	5YR 2.4/4	2.5Y 7.5/6
	(pale yellow)	(dark brown)	(dull reddish yellow)
Diameter (mm):	Plying 1.30		0.20–2.00
Twist, Twist No. (/cm):	—Z / —Z S (2.0–2.5)		—
Density (/cm):	(0.5–0.55) × 3		5.0–5.5
	Weft (pattern)	Weft (pattern)	
Raw material:	*Sheep	*Normal goat	
Color:	9YR 9/2	5YR 2/1.5	
	(pale beige)	(dark grayish brown)	
Diameter (mm):	0.20	0.30	
Twist, Twist No. (/cm):	—S / —S Z (3.0)	—S / —S Z (1.5)	
Density (/cm):	(0.25–0.30) × 3	(0.25–0.30) × 3	
Remarks:	Ground warp: triple grandrelle threads in parallel. A row of checker-like pattern which consists of about 1.0 cm each in warp and weft direction, woven with 7 pale beige sheep's plying threads and 7 dark grayish brown normal goat's plying threads each by turns. And above and below the pattern portion, two dark grayish brown normal goat's threads running in weft direction.		
Fragmentary specimens:	1408		

Acknowledgements

We should like to highly appreciate the cooperation Mr. Tomitake Higuchi, Director of Fibers & Textiles Laboratories, Toray Industries, Inc., and his colleagues have continuously lent us concerning the analyses of textile fibers as shown in the following part of this report, as well as the Toray Science Foundation. Moreover, taking the opportunity of our current report reaching completion of the at-Tar cave group, Hill C textile analyses, we must express our deep gratitude to our colleagues for their efforts who have been engaged in the excavation researches into the at-Tar Caves as well as in the classification and analytical studies of at-Tar textiles for these many years. We also thank Mrs. Maya Ikuma who kindly participated in the discussion for the completion of the English manuscript.

Bibliography

Damerji, Muayad Said

1991 The Second Treasure of Nimrud, *Near Eastern Studies* Vol. V, pp. 9–16.

Fibers & Textiles Laboratories, Toray Industries, Inc.

1990 Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site, *al-Rāfidān* Vol. XI, pp. 69–79, Pls. 1–13.

1991 Report on the Analyses of Fibers of Rush Mats at at-Tar Caves, *al-Rāfidān* Vol. XII, pp. 163–165, Pls. 3–4.

1993 Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site: Part 3, *al-Rāfidān* Vol. XIV, pp. 149–150, Pls. 1–2.

1996a Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site: Part 4, *al-Rāfidān* Vol. XVII, pp. 187–189, Pls. 1–4.

1996b Report on the Analyses of Textiles Uncovered at the Nimrud Tomb-Chamber, *al-Rāfidān* Vol. XVII, pp. 199–200, Pls.1-6.

Fujii, H.
1983 At-Tär Caves, *Archiv für Orientforshung* Band XXIX, pp. 173–183.

Fujii, H. (ed.)
1976 *Al-Tar I: Excavations in Iraq, 1971–1974*, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo.
1980 A Special Edition on the Studies on Textiles and Leather Objects from Al-Tar Caves, Iraq, *al-Rāfidān* Vol. I (in Japanese).

Fujii, H., Kawana, T., Matsumoto, K., Ohnuma, K., Wada, K., Inaoka, H.
1985 Preliminary Report on the 4th season of Excavation at Al-Tar Caves, *al-Rāfidān* Vol. V/VI, pp. 3–65.

Fujii, H. and Sakamoto, K.
1987 Roman Textiles from at-Tar Caves in Mespootamia, *Mesopotamia* XXII, pp. 215–231.
1990 Textiles from at-Tar Caves; Part II-(1): Cave 16, Hill C, *al-Rāfidān* Vol. XI, pp. 45–65, Pls. 1–3.
1992 Cultural Contacts between the East Mediterranean Coastal Area and Mesopotamia in A.D. 1st-3rd Centuries, Marked Characteristics of the Textiles Unearthed from at-Tar Caves, Iraq, *al-Rāfidān* Vol. XIII, pp. 95–103.
1993a —ditto— in *Arabia Antiqua, Hellenistic Centres around Arabia* (Serie Oriental, Vol. LXX, 2), pp. 201–204.
1993b The Marked Characteristics of the Textiles Unearthed from the At-Tar Caves, Iraq, *Oriental Carpet and Textile Studies* Vol. IV, pp. 35–46, the San Francisco Bay Area Rug Society and OCTS Ltd.
1994 The Close Relationship Between Hatra Sculpture Design and At-Tar Textile Design, *al-Rāfidān* Vol. XV, pp. 73–76.

Fujii, H., Sakamoto, K. and Ichihashi, M.
1989 Textiles from at-Tar Caves, Part I: Cave 12, Hill C, *al-Rāfidān* Vol. X, pp. 109–165, Pls. 27–37.
1993 Textiles from at-Tar Caves, Part II-(3): Cave 16, Hill C, *al-Rāfidān* Vol. XIV, pp. 109–133, Pls. 1–7.
1994 Human-Figured Emblems by Tapestry-Weave Technique Unearthed from At-Tar Caves, *al-Rāfidān* Vol. XV, pp. 77–89, Pls. 1–4.
1996 Textiles from at-Tar Caves, Part II-(4): Cave 16, Hill C, *al-Rāfidān* Vol. XVII, pp. 145–173, Pls. 1–12.

Fujii, H., Sakamoto, K., Ichihashi, M., Sadahira, M. and Fibers & Textiles Laboratories, Toray Industries, Inc.
1991 Textiles from at-Tar Caves: Part II-(2): Cave 16, Hill C, *al-Rāfidān* Vol. XII, pp. 157–165, Pls. 1–4.

Ii, H.
1986 Excavations at At-Tar Caves, The Fifth Working Season: Cave C-16, *al-Rāfidān* Vol. VII, pp. 1–21, Pls. 1–8 (in Japanese).

Kago, Y.
1975 Manufacturing Process of Linen Textile in Niigata Prefecture (Echigo-Johfu), *Dyeing and Weaving in Japan* Vol. 7, pp. 149–180 (in Japanese: 越後上布のできるまで—工程と技法—『日本の染色７，縮と上布』泰流社)。

Kawanishi, H. and Others
1995 *AKORIS-Report of the Excavations at Akoris in Middle Egypt, 1981–1992*, Koyo Shobo, Kyoto, p. 281, Pl. 110–1, 2.

Kimura, M., Sakamoto, K. and Fujii, H.
1993 Studies on Identification of the Natural Dyes on the Textiles from At-Tar Caves, *al-Rāfidān* Vol. XIV, pp. 141–148.

Pfister, R. and Bellinger, L.
1945 *The Excavation at Dura-Europos: Final Report IV; Part II*, Yale University Press, New Haven.



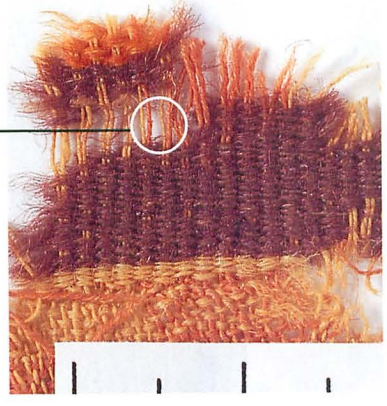
a Reconstruction of checker textile with border decoration (Textile 2, Specimens IV-MK-1362-1, IV-MK-1362-2a).



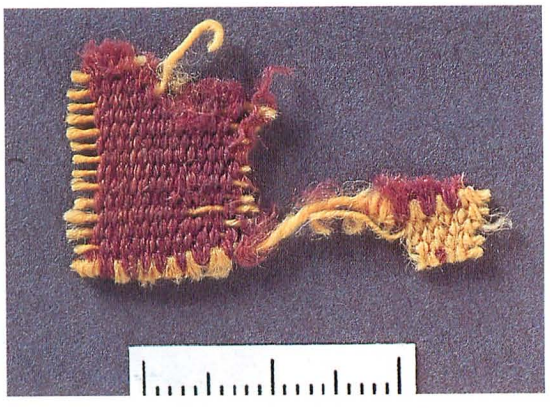
c Fragments with dark red horizontal band (Textile 3, Specimen IV-MK-1342-2).



d Soumak weave (Textile 4, Specimen IV-MK-1123-3) (front). (back)



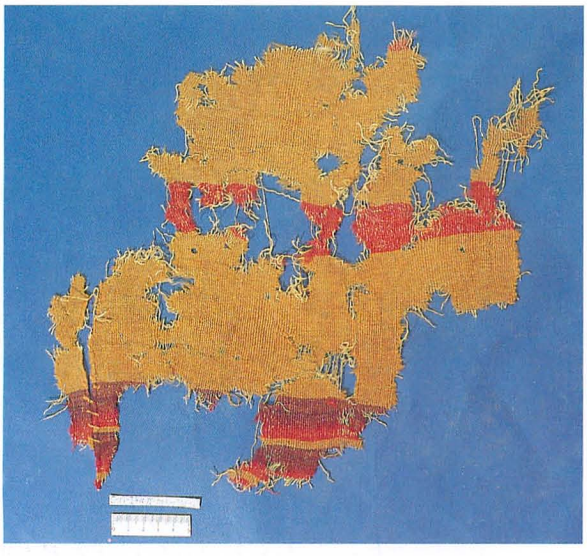
b Fragment with warps of different colors (Textile 2, Specimen IV-MK-1362-1-3d).



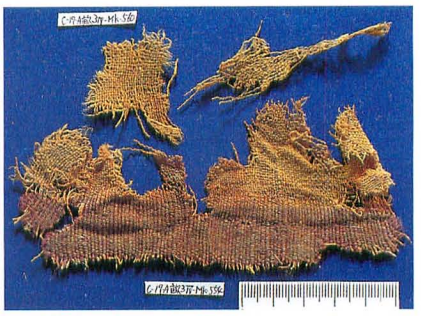
e H-shape pattern end (Textile 4, Specimen IV-MK-1123-2). ←



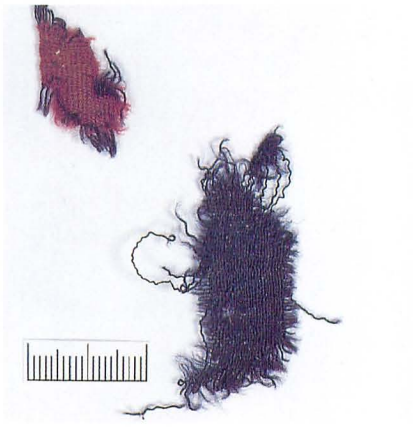
a Textile with color gradated horizontal band pattern (Textile 6, Specimen IV-MK-1355).



b Fragment with two selvages' joining part (Textile 6, Specimen IV-MK-1356-1).



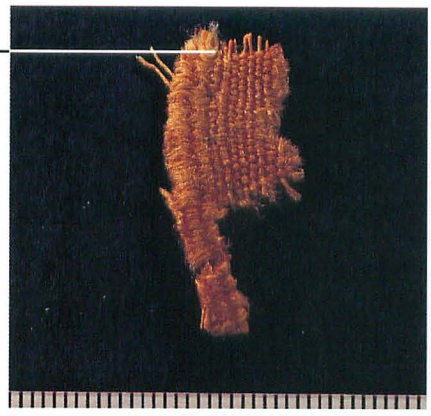
c Yellowish brown horizontal band pattern (Textile 7, Specimen IV-MK-554).



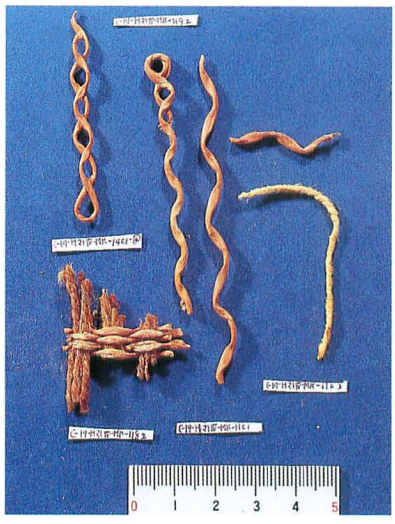
d Gauze-like fragments with band pattern (Textile 8, up: pattern part, Specimen IV-MK-467-2, down: ground part, Specimen IV-MK-559).



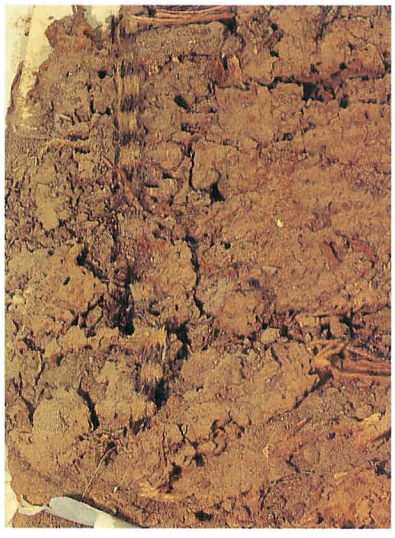
e Fragments with horizontal stripe pattern (Textile 9, Specimen IV-MK-1128, -1043-1, -1043-2).



a Warp alignments beside selvage (Textile 16, Specimen IV-MK-571).



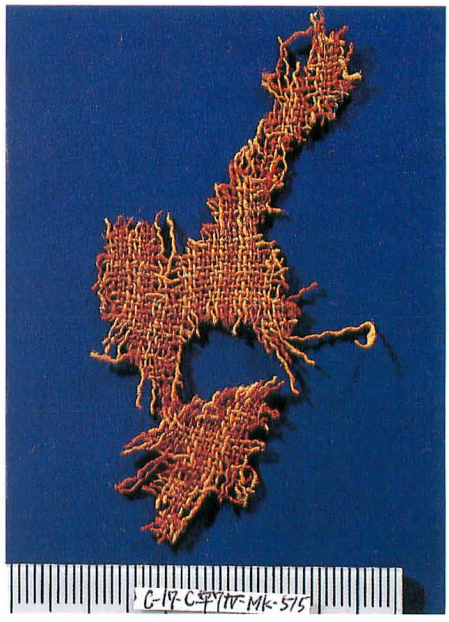
b A triple warp grandrelle thread and a thick rush weft (Textile 26, Specimen IV-MK-1408).



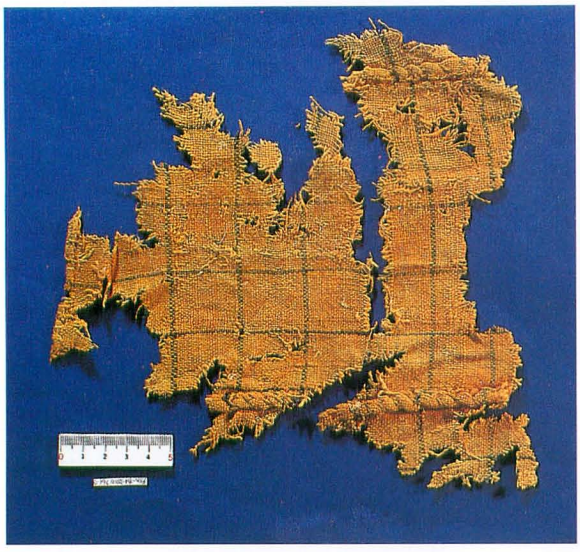
c Rush mat with checker border (Textile 26, Specimen IV-MK-1480).



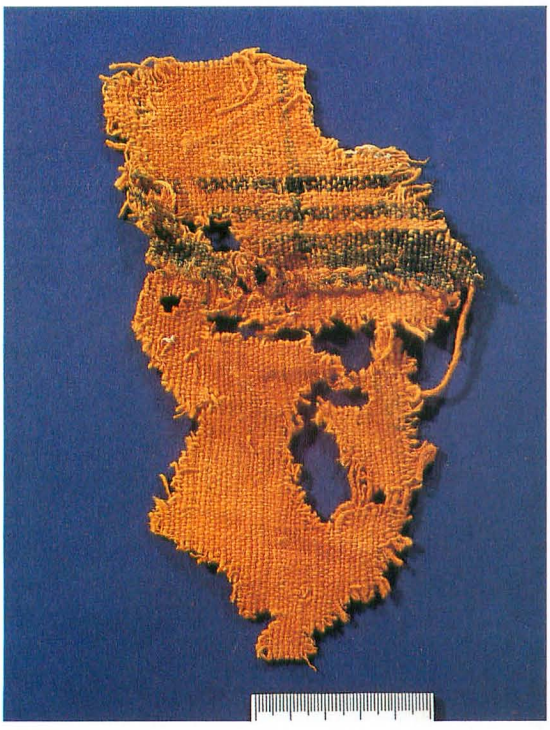
d Fragment of plain weave made with superfine threads (Textile 12, Specimen IV-MK-1428).



e Checker textile (Textile 22, Specimen IV-MK-515).



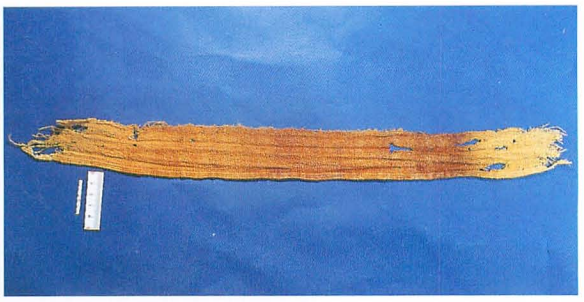
a Cotton checker textile (Textile 21-1, Specimen IV-MK-446) (back).



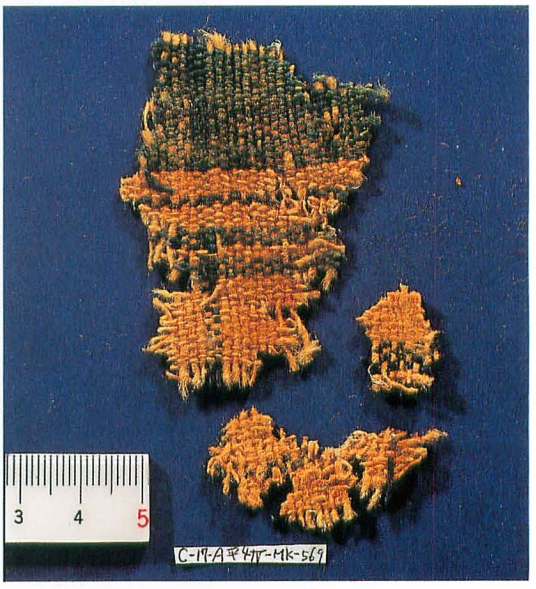
b Checker fragment IV-MK-372 sewn together with another fragment (Textile 21-3) (back). ←



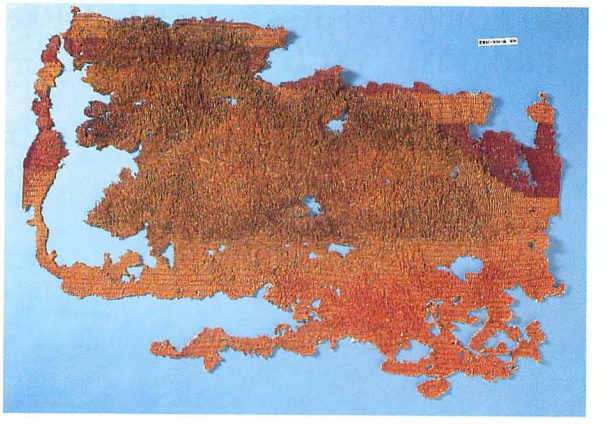
c Fragment with a rope-like warp finish (Textile 19, Specimen IV-MK-1368). ←



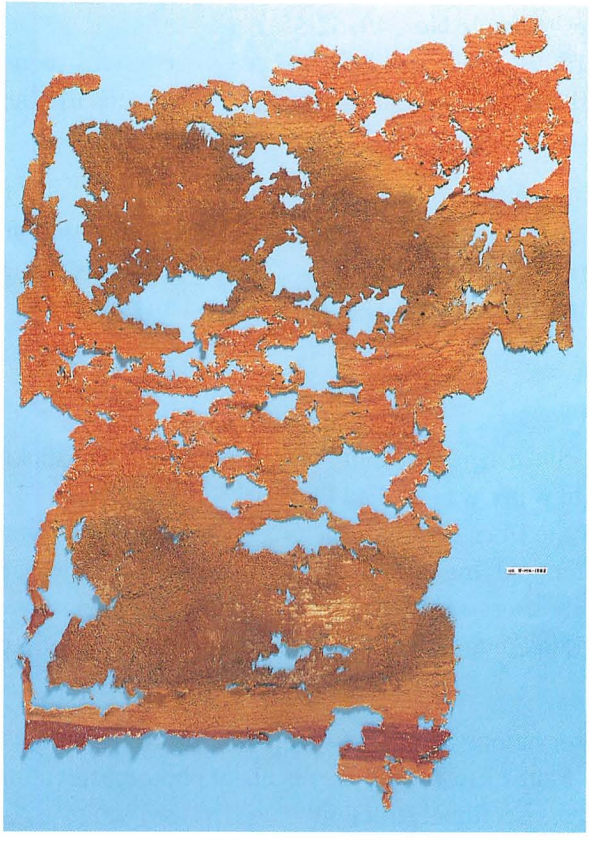
d Fragment used as a string-like shape (Textile 19, Specimen IV-MK-1367). ←



e Checker patten end near the selvage contour (Textile 21-3, Specimen IV-MK-569). ←

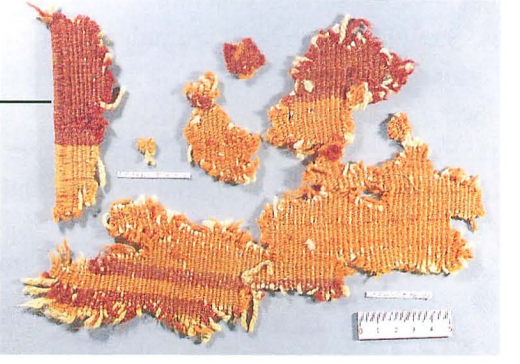


a Specimen IV-MK-1382-1.



b Specimen IV-MK-1382-2.

Specimen IV-MK-1382-4
(selvage of IV-MK-1382-1)



c Specimen IV-MK-1382-3.

Pile textile with staircase pattern (Textile 24)

APPENDIX: REPORT ON THE ANALYTICAL RESULTS OF TEXTILES FROM THE ANCIENT IRAQI SITE — PART 5

Fibers & Textiles Laboratories,
TORAY Industries, Inc.*

This is to report the results of morphological analyses conducted by us on the textiles uncovered at at-Tar Caves.

Summary

(1) Non-pile textiles (Sample Nos. 49, 52-55)

In view of the fiber surface structure and cross-sectional structure, the specimens tested here are composed of beast fibers, i.e., animal fibers. The specimens use the fibers closely resembling sheep fibers which are the representative beast fibers of modern times.

(2) Pile textiles (Sample Nos. 62-65)

In view of the fiber surface structure and cross-sectional structure, the specimens treated here are composed of beast fibers, i.e., animal fibers. The specimens use the fibers closely resembling sheep fibers which are the representative beast fibers of modern times.

Analytical details

(1) Methods

A. Pretreatment: Since a great quantity of mud or the like was sticking to the fiber surfaces, ultrasonic wave washing in water was applied to them.

B. Observation of the fiber surface structure: The specimens were observed by scanning electron microscope, after applying Au-Pd shadowing to their fiber surfaces.

C. Observation of the cross-sectional structure: The specimens were observed by optical microscope, having been wrapped up in paraffin and cut into a section of 6 μm in thickness each by Minot's microtome.

(2) Results and observations

Material analyses: Plates 1 to 8 show the results of photo-observations of the specimen's fiber surface structure and cross-sectional structure.

a. Sample Nos. 49-56, 61 (without normal goat) are all judged to be of sheep fibers in view of their cross section, thickness and surface structure.

b. The pile textiles, Sample Nos. 62-65, are judged to be of sheep fibers in view of their cross section, thickness and surface structure. The pile plied threads evidenced in Textile 24 largely consist of fine fibers.

c. The cotton fibers (Sample Nos. 57-60) used here are approximating to indian cotton in quality, through the examination of its cross-sectional structure and the wrinkles forming in the epidermis structure.

d. Serious damage has been caused to most of the fibers currently tested by us.

* 3-3-7 Sonoyama, Ohtsu, Shiga Prefecture, 520 Japan

Table 1 Analytical Results of Fibers of the Non-Pile Textiles: Cave 17, Hill C.

Sample No.	Textile No.	Description			Material	Fiber width (μm)
		Specimen No.	Kind	Color of outward appearance	Animal fiber	
49	T-2	IV-MK-1362-1	Warp (chequered) Weft (chequered) Pattern band weft	Dull reddish yellow 2.5Y7.5/6 Vivid yellowish red 7R5/14 Dark wine 7.5RP2.4/5	Sheep Sheep Sheep	20-40 20-40 25-45
50	T-5	IV-MK-761	Ground warp, weft	Dark reddish brown 10R2/3	Sheep	24-45
51	T-6	IV-MK-1355	Ground warp, weft	Dull reddish yellow 2.5Y7.5/6	Sheep	25-45
52	T-7	IV-MK-469	Ground warp, weft Band pattern weft	Gold 2.5Y7/10 Yellowish brown 9YR4/4	Sheep Sheep	20-30 20-35
53	T-8	IV-MK-559 IV-MK-467-2	Ground warp, weft Pattern weft	Dark purplish blue 6PB2/4 Dull reddish purple 7.5RP4.5/6	Sheep Sheep	20-40 20-35
54	T-9	IV-MK-1128	Ground warp Ground weft	Dull reddish yellow 2.5Y7.5/6 Dull reddish yellow 2.5Y7.5/6	Sheep Sheep	25-40 20-50
55	T-12	IV-MK-1428	Ground warp, weft	Olive yellow 5.5Y6/8	Sheep	20-35
56	T-20	IV-MK-1350-1	Ground warp, weft	Dark brown 5YR2.4/4	Sheep	25-50
57	T-21-1	IV-MK-446	Warp (chequered) Weft (chequered)	Gold 2.5Y7/10 Dark bluish green 10G2.4/3	Cotton Cotton	7.5-37.5 5.0-37.5
58	T-21-3	IV-MK-372	Warp (chequered) Weft (chequered)	Gold 2.5Y7/10 Dark Bluish green 10G2.4/3	Cotton Cotton	12.5-30 7.5-37.5
59	T-22	IV-MK-515	Warp, weft (chequered)	Yellowish brown 9YR4/4	Cotton	7.5-32.5
60	T-23	IV-MK-763	Ground warp	Dull reddish yellow 2.5Y7.5/6	Cotton	12.5-27.5
61	T-26	IV-MK-1408	Pattern weft Pattern weft Ground warp (grandrelle thread) Ground warp (grandrelle thread)	Pale beige 9YR9/2 Dark grayish brown 5YR2/1.5 Pale yellow 5.5Y9/3 Dark brown 5YR2.4/4	Sheep Normal goat Sheep Sheep	25-30 65-112.5 22.5-32.5 27.5-45

Table 2 Analytical Results of Fibers of the Pile Textiles: Cave 17, Hill C.

Sample No.	Description				Material	Fiber width (μm)
	Textile No.	Specimen No.	Kind	Color of outward appearance	Animal fiber	
62	T-24	IV-MK-1382-1	Ground warp (Grandrelle thread) Ground warp (Grandrelle thread) Pile plied threads	Light reddish yellow 2.5Y9/5 Yellowish brown 9YR4/4 Deep reddish orange 10R4.5/10	Sheep Sheep Sheep	20-35 25-55 20-35
63	T-25-1	IV-MK-335	Pile plied threads	Gold 2.5Y6/8	Sheep	20-50
64	T-25-2	IV-MK-1209	Pile plied threads	Gold 2.5Y6/8	Sheep	25-35
65	T-25-3	IV-MK-1436	Pile plied threads	Gold 2.5Y6/8	Sheep	25-40

The sample numbers used here mean consecutive numbers of the specimens which were analyzed by Toray, following those given in the previous volume of *al-Rāfidān* (Vol. XVII): p. 188.

Conclusion

Material analyses: Tables 1 and 2 indicate the summary of morphological analyses attempted on the specimens by microscope.

Bibliography

Fibers & Textiles Laboratories, Toray Industries, Inc.

1990 Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site, *al-Rāfidān* Vol. XI, pp. 69–79, Pls. 1–13.

1991 Report on the Analyses of Fibers of Rush Mats at at-Tar Caves, *al-Rāfidān* Vol. XII, pp. 163–165, Pls. 3–4.

1993 Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site: Part 3, *al-Rāfidān* Vol. XIV, pp. 149–150, Pls. 1–2.

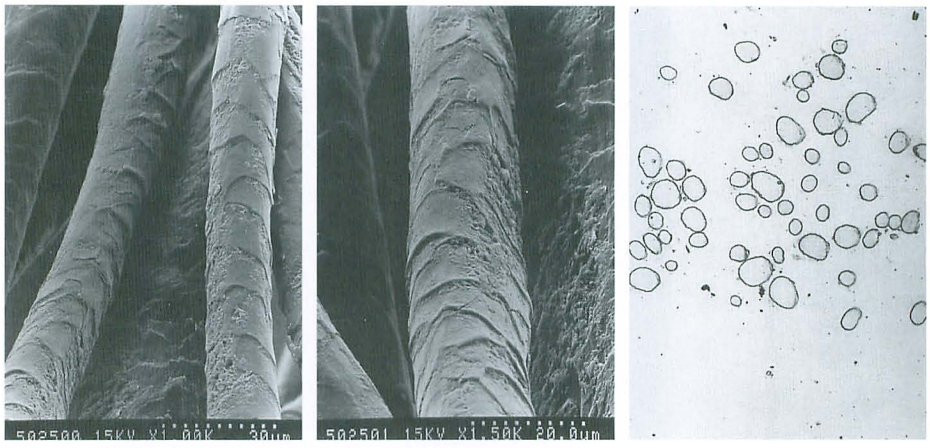
1996a Report on the Analyses of Textiles Uncovered at the Ancient Iraqi Site: Part 4, *al-Rāfidān* Vol. XVII, pp. 187–189, Pls. 1–4.

1996b Report on the Analyses of Textiles Uncovered at the Nimrud Tomb-chamber, *al-Rāfidān* Vol. XVII, pp. 199–200, Pls. 1–6.

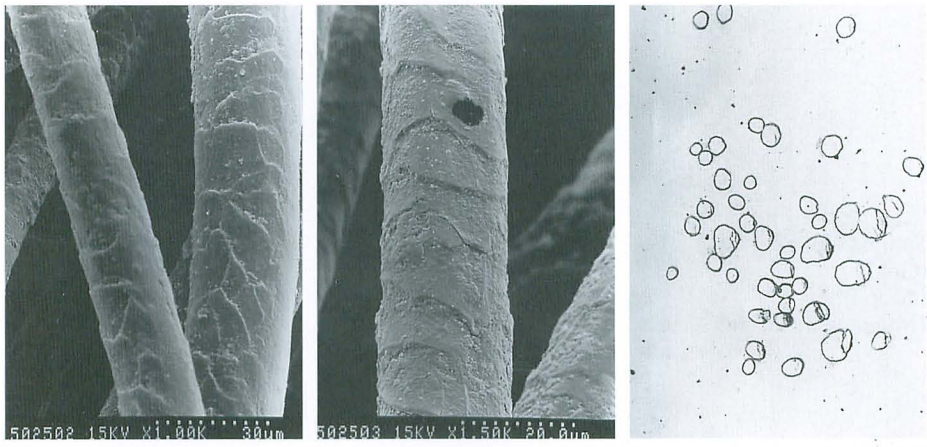
Longitudinal view
× 1000 × 1500

Cross section
× 200

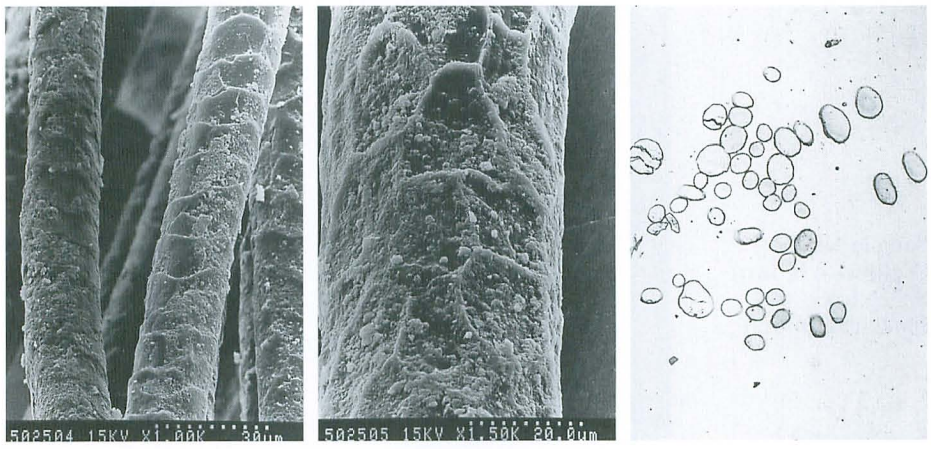
Sample No. 49
(Dull reddish yellow)
Sheep fiber
Warp (chequered)



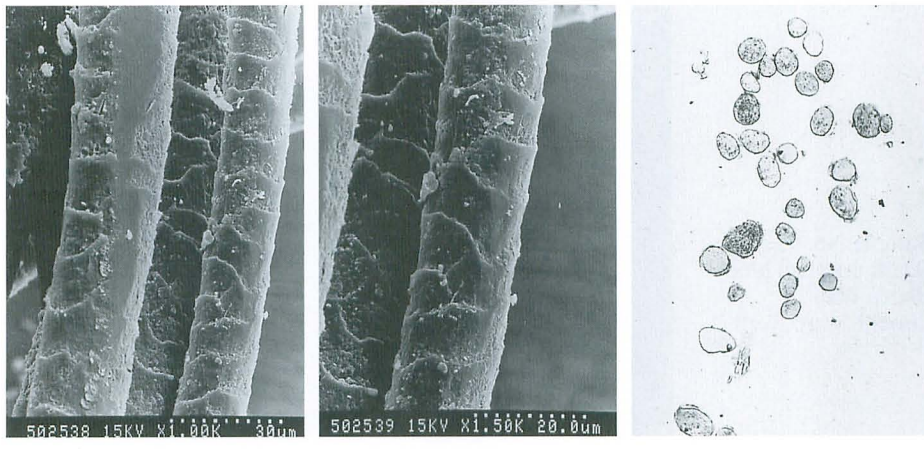
Sample No. 49
(Vivid yellowish red)
Sheep fiber
Weft (chequered)



Sample No. 49
(Dark wine)
Sheep fiber
Pattern band weft

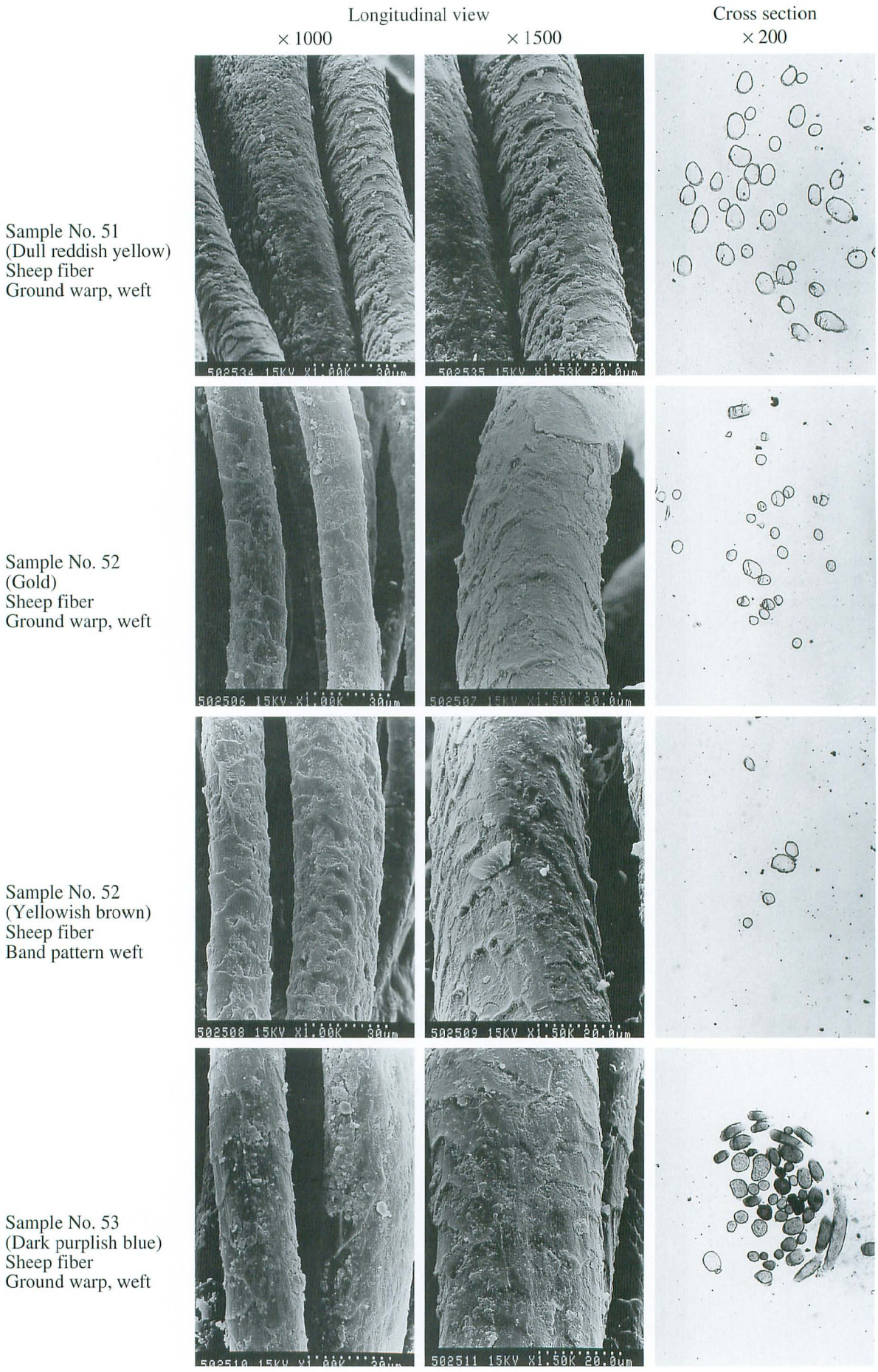


Sample No. 50
(Dark reddish brown)
Sheep fiber
Ground warp, weft



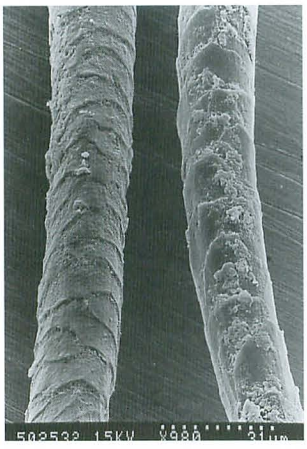
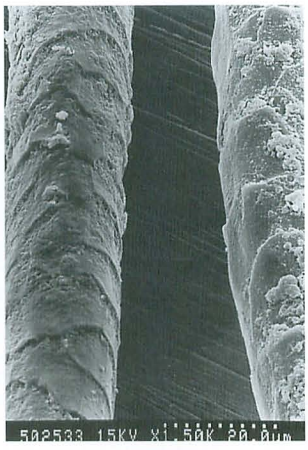
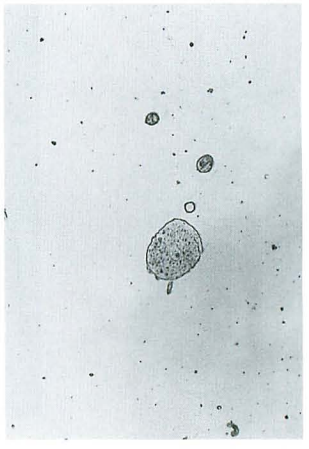
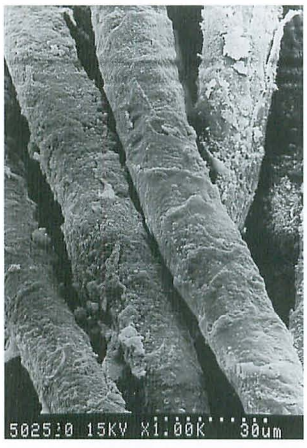
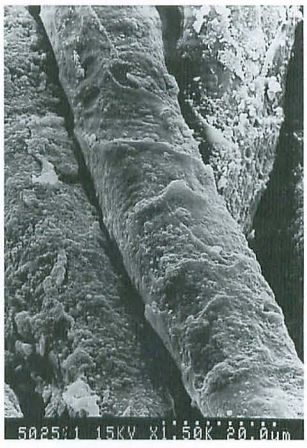
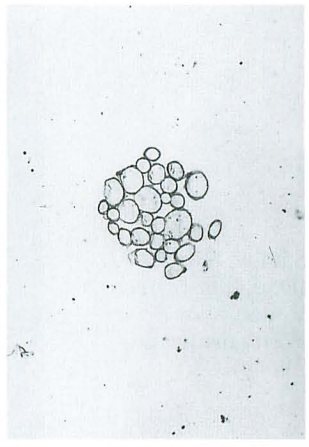
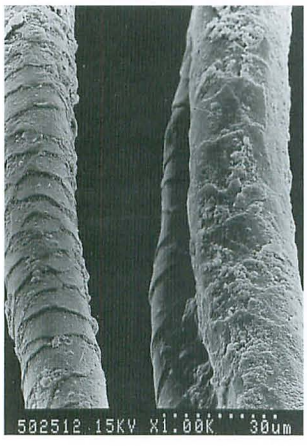
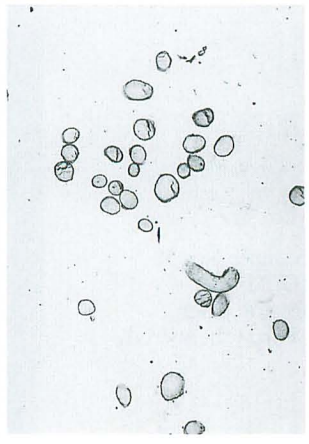
Samples 49 and 50

Pl. 2



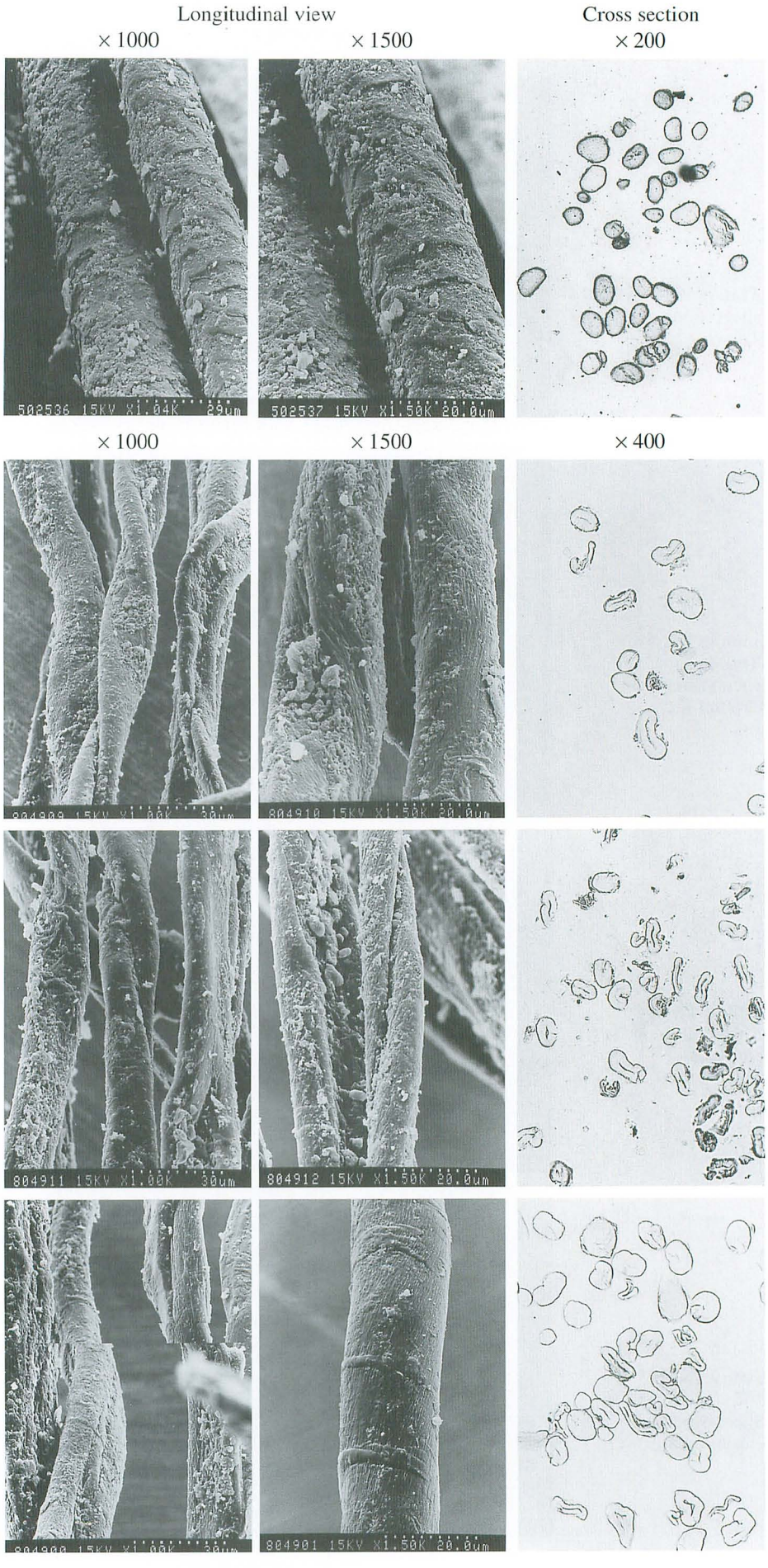
Samples 51, 52 and 53

Longitudinal view

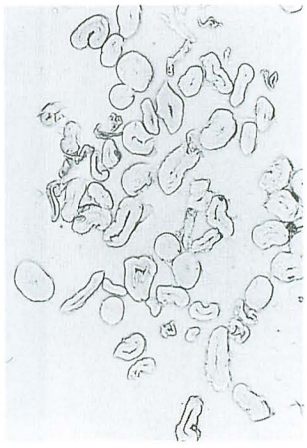
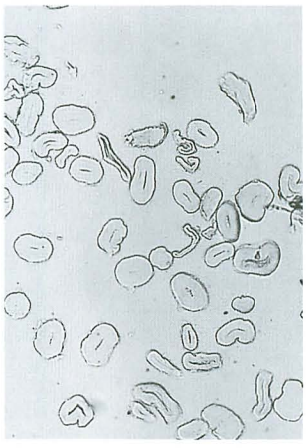
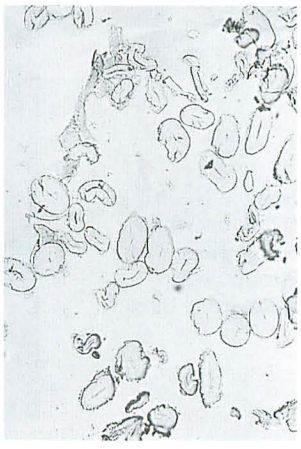
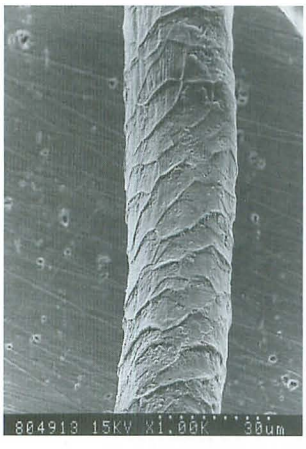
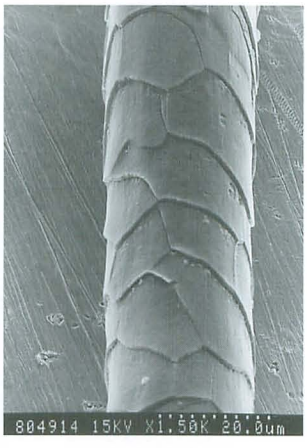
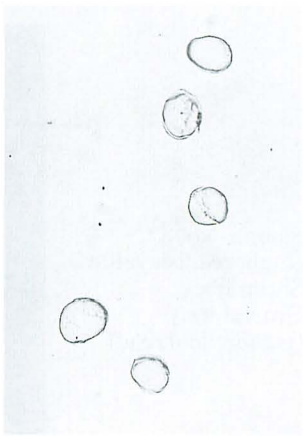
	× 1000	× 1500	Cross section × 200
Sample No. 53 (Dull reddish purple) Sheep fiber Pattern weft			
Sample No. 54 (Dull reddish yellow) Sheep fiber Ground warp			
Sample No. 54 (Dull reddish yellow) Sheep fiber Ground weft			
Sample No. 55 (Olive yellow) Sheep fiber Ground warp, weft			

Samples 53, 54 and 55

Pl. 4

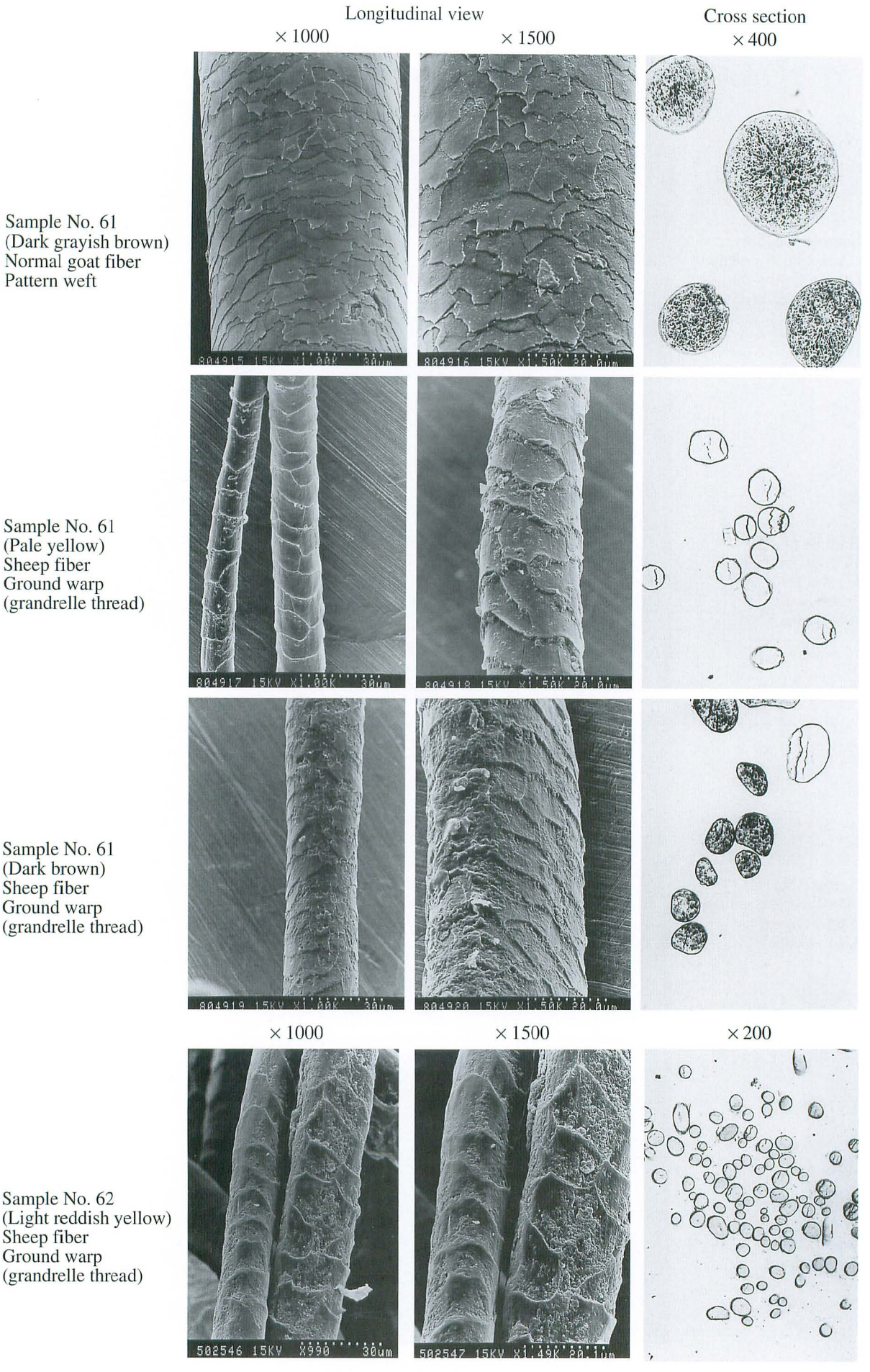


Samples 56, 57 and 58

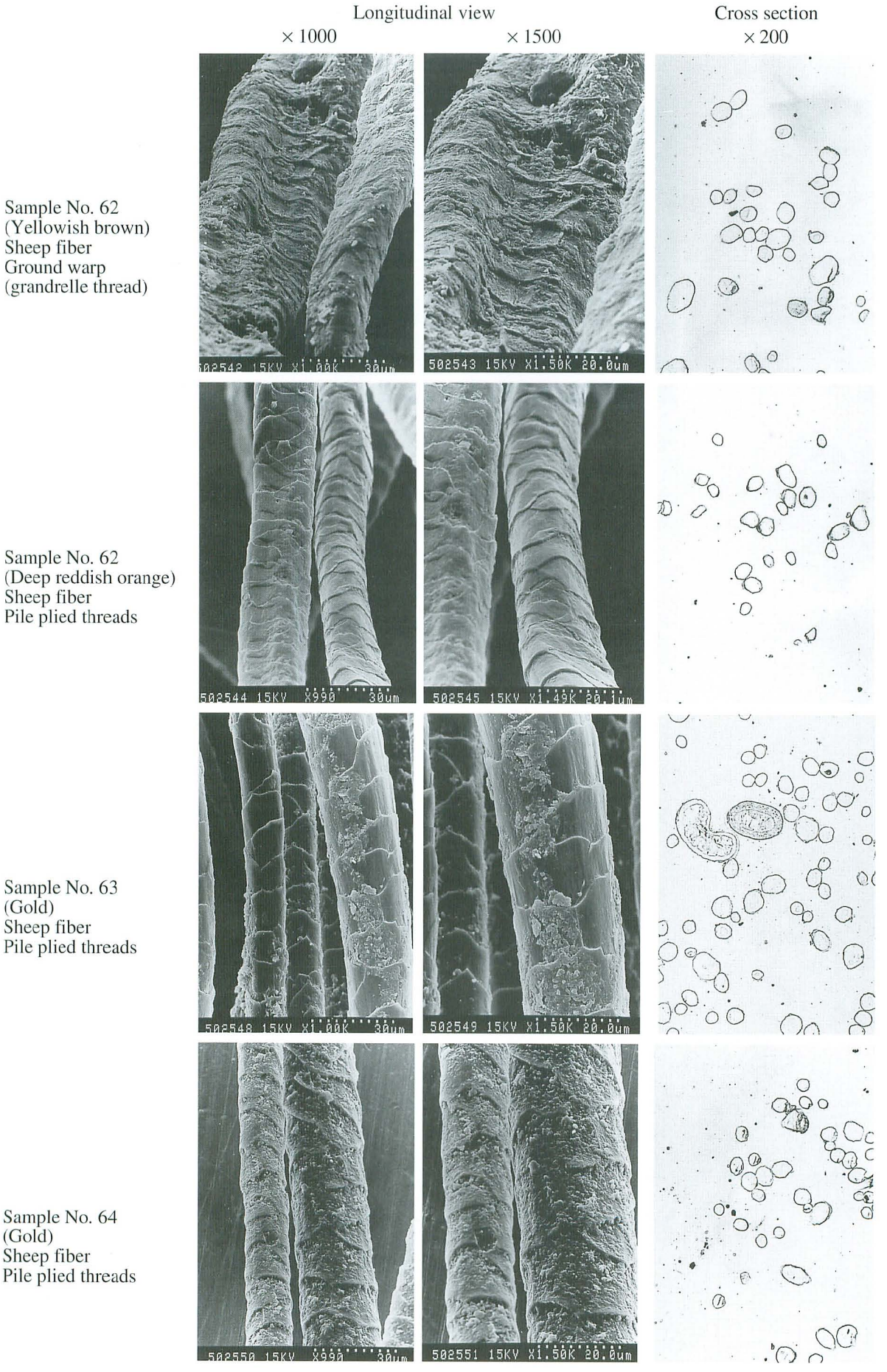
	Longitudinal view × 1000	Longitudinal view × 1500	Cross section × 400
Sample No. 58 (Dark bluish green) Cotton fiber Weft (chequered)			
Sample No. 59 (Yellowish brown) Cotton fiber Warp, weft (chequered)			
Sample No. 60 (Dull reddish yellow) Cotton fiber Ground warp			
Sample No. 61 (Pale beige) Sheep fiber Pattern weft			

Samples 58, 59, 60 and 61

Pl. 6



Samples 61 and 62



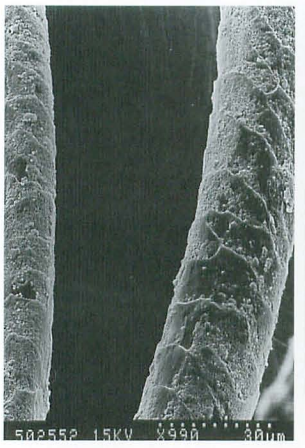
Samples 62, 63 and 64

Pl. 8

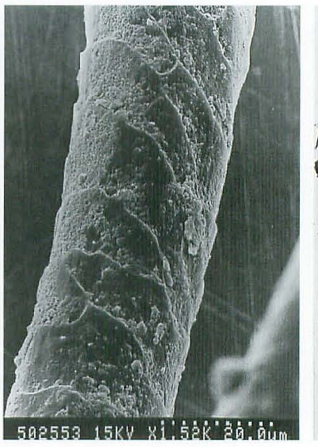
Sample No. 65
(Gold)
Sheep fiber
Pile plied threads

Longitudinal view

× 1000



× 1500



Cross section

× 200



Sample 65

A SYRIAC OSTRACON FROM CTESIPHON[1]

Erica C.D. HUNTER*

The *Synodicon Orientale* mentions on numerous occasions the 'Great church of Seleucia' as the patriarchal seat of the Church of the East [Chabot 1902: 266, 286, 292, 313, 319, 457, 459–60, 554–5][2]. It was situated in the circular city of Choche which was separated from Ctesiphon by the Tigris river. The 'Great church of Seleucia' was the venue for several councils of the Church of the East, the earliest being held in 358 A.D., but its prestige was consolidated in 544 A.D. when Mar Aba I decreed that a patriarchal consecration was invalid unless performed in this church, a function which was still being fulfilled in 1318 A.D[3]. During its long history, the 'Great church of Seleucia' underwent several rebuildings, sometimes through royal endowment, at other times as a result of its destruction by inimical Sasanian monarchs[4]. However, no material evidence has come to light, even though J.M. Fiey tentatively probed whether the 'Great church of Seleucia' might be the church which was found at Qasr bint al-Qadi [Fiey 1967: 18].

Excavations at the mound of Qasr bint al-Qadi on the western side of Ctesiphon that were conducted by the German Oriental Society in 1928–29 revealed "a monumental building which soon proved to be a Christian church"[5]. The structure (27.18 x 15.06 metres), built of fired brick set with gypsum mortar, was described by Oscar Reuther as "an aisleless nave roofed with a barrel-vault supported on [rectangular] pillared walls" [Reuther 1929: 449]. At the east end were three chambers; a *prothesis* and *diaconikon* flanking the central altar-room in which a *ciborium* had once been erected. This stratum was superimposed on another earlier phase which was distinguished by its "heavy round piers" instead of the rectangular pillared walls [Reuther 1984 561][6]. The relationship between the phases remains unclear, but in the absence of any evidence of destruction, it is possible that the rebuilding resulted from a financial endowment.

Reuther hoped that a Syriac ostracon (Kt. W. 295) which was found "im mittleren Raum des Chores unter dem Fußboden der 2. Bauphase" [Kröger 1982: 48] might shed further light on the church, perhaps identifying the patron saint to whom it was dedicated[7]. He also hoped that the inscription might lend support to the dating of the church at Qasr bint al Qadi which he placed at the end of the Sasanian era, in the "middle or the end of the sixth century" [Reuther 1929: 451, Kröger 1982: 48]. In

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1) The author wishes to thank Dr. Jens Kröger (*Museum für Islamische Kunst*, Berlin) for his most generous assistance both in correspondence and during her visit to Berlin when she examined Ostracon Kt. W. 295. She also expresses her deep gratitude to Dr. Sebastian Brock (*The Oriental Institute*, Oxford) who, despite a most busy schedule, offered valuable comments about the inscription.

2) The designation Church of the East is preferred instead of the more common term Nestorian, to denote the Syriac-speaking church whose patriarchate was based at Seleucia-Ctesiphon.

3) Fiey, 1967: 17–18 provides a brief account of the history of the 'Great church of Seleucia'.

4) Fiey, 1967: 17 for the monies received by catholicos Yahwalaha I (415–20 A.D.) and the catholicos Mar Aba (540–551 A.D.) respectively from the Byzantine emperor Theodosius II and the ruling Lakhmid family at Hira. Reuther, 1984: 561 notes that the 'Great church of Seleucia' was rebuilt on each occasion after its demolition by the Sasanian monarchs Shapur II and Bahram V Gur.

5) Reuther, 1929: 449. Discussion of the church at Qasr bint al Qadi can also be found in Meyer, 1929: 23–4. A succinct summary is presented by Lerner, 1992: 259, whilst Reuther, 1984: 560 places the church in the wider context of Sasanian architecture, as does Okada, 1991: 76 and Okada, 1992. Kröger, 1982: 45–8 pays particular attention to the decorative finds which were discovered *in situ*.

6) See Reuther 1984: 562. Fig. 162 a-b for plans of the two churches, which are also found in Reuther 1929: 449. Meyer 1929: 23; Okada 1991: 75 and Kröger, 1982: 46 only reproduce figures of the second, later phase.

7) Streck 1917: 45 notes that at Ctesiphon churches were dedicated to St Sergius, St Narkos as well as to the Virgin Mary. There was also a convent of Saint Pethion. However, no positive identification can be made with the church at Qasr bint al Qadi.

the 1929 issue of *Antiquity*, Reuther noted that the inscription called upon the "god of Abraham, Isaac, and Jacob", but a translation, by the late Rudolf Macuch, together with a photograph, only appeared in 1982 [Kröger 1982: 48, n. 267 and Pl. 12.1]. The present paper offers a discussion and re-reading of the inscription. As well as lending further comment on the church at Qasr bint al-Qadi, concomitantly it is hoped that this information will augment the valuable work on the development of Syriac-speaking Christianity in south-west Iraq to which the excavations at Ain Sha'ia conducted by the *Japanese Archaeological Expedition to Iraq*, under the directorship of Prof. Hideo Fujii, have so richly contributed.

Ostracon Kt. W. 295

Physical characteristics:[8]

Ostracon Kt. W. 295 is now housed in Berlin, at the *Museum für Islamische Kunst*. The inscription was written on the outer surface of a sherd which came from the wall of a wheel-made vessel of unknown shape and size. The ostracon is a trapezoid: 8.3 cm wide, with the left-hand side 4.5 cm long and the right-hand side 6.5 cm. Nine pronounced rilling lines, spaced at approximately 1.00 cm intervals, occur on the inner surface of the sherd. Traces of these are visible on its outer surface. The ostracon is yellowish-brown in colour, of medium-fine texture with a black grit inclusion. Spotting on the outer surface, possibly due to the decay of a vegetable inclusion, has created some difficulties in reading the diacritical points of the inscription.

The ostracon has been fractured at the sixth and final line of the inscription, but the upper part together with the left and right-hand margins are intact. The scribe appears to have selected the piece after the vessel, of which it once formed a part, was broken. The direction in which the inscription was written, running diagonally across the rilling lines, reveals that the scribe rotated the ostracon anti-clockwise through 45° from its original position in the wall of the pot. Presumably he chose to do so, in order to maximise the amount of space available in which to write the inscription. His action has also made a natural use of the ostracon's profile width, which gradates from 0.6 cm at the first line of the inscription to 1.0 cm at the bottom edge of the sherd.

Palæography:[9]

The six line inscription was written in black ink probably with a reed pen[10]. Despite the limited repertoire of characters the inscription has no Gimel, Teth, Kaph, Pe, Cadhe, Shin and Tau - its unvocalised script is typical of Nestorian Estrangela[11]. The characters are written in the classic angular style, with cursive overtones.

Semkath (ll. 2, 5): Estrangela with the angular left-hand loop higher than the right-hand loop. Ligatured to the following letter.

Qoph (ll. 2, 3, 5): the rectangular Estrangela form is ligatured to both preceding and following letters.

Alaph (ll. 1, 2, 3, 4, 5): the freestanding examples are Estrangela, while the ligatured final forms are cursive.

Dalath (ll. 2, 3, 4, 5, 6): the initial square form is Estrangela, whilst the rounded ligatured medial and final forms are cursive. All examples are distinguished by a lower diacritical point.

Resh (ll. 1, 3, 4): no initial examples, but the ligatured medial and final forms are rounded, with an

8) The locus is given as Kt. W. 295 in the findbook of the excavations which describes the ostracon as "Scherbe mit syrischer Inschrift. Gefunden unter dem Kirchenfußboden". The sherd was found between 15 XII 1928 and 2 I 1929 when it was first mentioned by Reuther in a report dated 2 I 1929. The author extends her thanks to Dr. J. Kröger for supplying this information.

9) See Fig. 1: Line drawing of Ostracon Kt. W. 295.

10) Hatch 1946: 8–10 for a discussion of writing implements and inks. The coarser fabric texture of the ostracon may recommend a reed pen, over and above a quill.

11) Hatch 1946: 30–39 for a survey of Estrangela and Nestorian palæography, although it might be noted that Hatch's observations apply primarily to manuscripts.

upper diacritical point.

Waw (ll. 1, 2, 3): Estrangela, ligatured to the preceding letter, although the ligature in l.1 to the following letter is unusual.

He (ll. 4, 5): the closed left loop is cursive, but the open right loop, which is ligatured to the preceding letter, is typical of Estrangela.

Mem (ll. 1, 3, 4): Estrangela, with both the final closed Mem and the open initial and medial Mem being ligatured to the preceding letter.

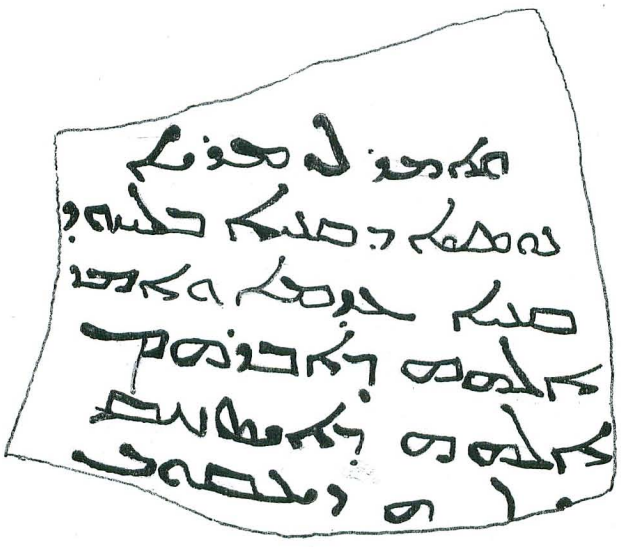


Fig. 1 Line drawing of Ostracon Kt. W. 295. Scale 1:1.

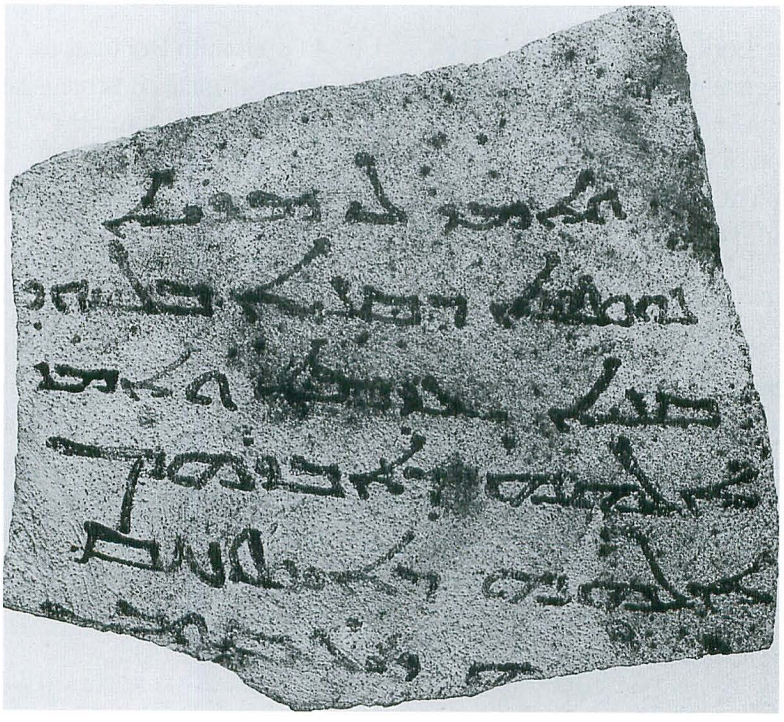
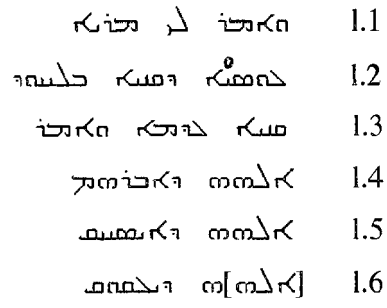


Fig. 2 Ostracon Kt. W. 295.

Text:[12]

Sigla: [ ] = reconstructed text ܛ̊ = uncertain reading



Transliteration and Translation:
The Transliterations and Translations of Hunter and Macuch are placed side by side to facilitate comparison since the Commentary on Ostracon Kt. W. 295 concentrates on their variant readings[13].

	Hunter		**Macuch**
	Sigla: [ ] = reconstructed text		ḡ = uncertain reading
l.1	w'mr ly mry'	l.1	w'mr ly mry'
l.2	'wsẙ' dqny' blḥwd	l.2	'wr' dbn'y' blḥwd
l.3	qny' 'dm' w'mr	l.3	bn'y' 'zq' w'mr
l.4	'lhh d'brhm	l.4	'lhh d'brhm
l.5	'lhh d'ysḥq	l.5	'lhh d'ysḥq
l.6	['lh]h dy'qwb	l.6	['lh]h dy'qwb

	Hunter		**Macuch**
	Sigla: [ ] = reconstructed text		
l.1	And the Lord said to me:	l.1	Et dixit mihi Dominus
l.2	The essence which is possessed alone	l.2	Ecclesia quae constructa est seorsim
l.3	Is still possessed. And He said,	l.3	constructa est rotunda (?) Et dixit
l.4	The God of Abraham,	l.4	Deus Abrahami
l.5	The God of Isaac,	l.5	Deus Isaaci
l.6	[The God] of Jacob.	l.6	[Deus] Jacobi

Commentary:
L.2 word 1: 'wsy' (Hunter) 'wr' (Macuch).
The initial letter could be read as either an Ayin or a Nun. By contrast, the palæography of the Semkath conforms with the Estrangela practice of writing the left loop higher and in a more angular fashion than the right loop, even if the ligature to the following letter is unusual[14]. Traces of ink between the Semkath and the final Alaph suggest that the scribe may have attempted to insert another letter which, on the considerations of space, may have been a Yodh.

12) See Fig. 2: Ostracon Kt. W. 295 for the accompanying photograph.

13) All references to Macuch in the Transliteration, Translation and Commentary on Ostracon Kt. W. 295 refer to his contribution in Kröger 1982: 48, n. 267.

14) Hatch 1982: 34 and n. 50 records that in manuscripts up to the seventh century A.D., the Semkath was usually unconnected to the following letter.

nws' "sanctuary, shrine" would make an attractive alternative reading, given the find-spot of Ostracon Kt. W. 295 [Payne Smith 1879–1901: col. 2325, Brockelmann 1928: 421]. However, difficulties arise in reconciling this masculine noun with the feminine participle dqny' which occurs, on two occasions, in ll.2 and 3. Similar problems also surround the potential reading nwsy' "trial" [Payne Smith 1879-1901: col. 2389]. Instead, if the initial letter is read as an Ayin, 'wsy' (οὐσία) "essence" might be considered, although this substantive is spelt with an initial Alaph [Payne Smith 1879–1901: col. 78, Brockelmann 1928: 9]. The substitution of Alaph with an Ayin would be exceptional, but may be influenced by Mandaic where the pattern is not uncommon[15].

L.2 word 2: dq'y'/dqny' (Hunter) dbn'y' (Macuch)...
The initial Dalath may either introduce a relative clause or signify a construct. Although the palæography of the second character is typical of an Estrangela Qoph, Macuch read it as the combination Beth-Nun [Hatch 1946: 35]. More difficult to discern is whether the next character is an Ayin or a Nun. dq'y'/dqny' might be read as the feminine singular participle Peal of either √Q'' "call out/cry out" [Payne Smith 1879–1901: 3682, Brockelmann 1928: 680] or √QN' "gain/possess" [Payne Smith 1879–1901: 3653, Brockelmann 1928: 675] although the substantive qny' "reed-pen" could be appropriate, especially since this was likely to have been the instrument with which the ostracon was written [Payne Smith 1879–1901, col. 3653, Brockelmann 1928: 677].

L.3 word 2: 'dm' (Ḥunter) 'zq' (Macuch)...
The elongated stroke of the initial letter defines it as an Ayin, whilst the lower diacritical point of the second character establishes the Dalath, rather than the Zain which Macuch proposes. Similarly the palæography of the third letter endorses the Mem, although the letter's form is closed, compared to the two open examples on l.1 [Hatch 1946: 33]. Despite the clarity of the palæography, the word's meaning is enigmatic and it is possible that the scribe meant to write 'dmš "still, now" instead of 'dm' "until" where either Dalath or Lamadh would normally follow [Payne Smith 1879–1901: 2799–2800].

Discussion:
The find-spot of Ostracon Kt. W. 295 raised expectations that the inscription was a dedication, perhaps commemorating the reconstruction of the church at Qasr bint al Qadi. However, as Macuch intimated in his discussion, the inscription does not appear to have any intrinsic connection either with the sanctuary, or with the church[16]. Nor does the inscription seem to be associated with the stucco statue of the male figure, possibly the patron saint of the church, that was found nearby the ostracon[17]. Indeed, had the inscription been a dedication it would have conceivably been written on stone, or on a gypsum plaque, rather than on a broken piece of pottery. Similarly, the shape and the dimensions of the ostracon do not suggest that it was some type of token deposited in connection with a refurbishment or restoration, where a more regularly-shaped sherd presumably would have been used.

The inscription appears to be a liturgical text. Whilst it only consists of 15 words, due to fracture of the ostracon at the sixth line, its contents can be divided into three parts. In each section the repetition of words is noteworthy. Thus the active feminine singular participle dqny' appears twice in the second part of the inscription, ll. 2–3 'wsy' dqny' blḥwd qny' 'dm', with additional impetus being supplied by the two adverbs blḥwd and 'dm'. In the third part, ll. 4–6, 'lh' "God" is repeated three times, in each case forming the first element in the construct with the patriarchs, Abraham, Isaac and Jacob. The

15) Yamauchi 1967: 75 provides examples of this phenomenon which, as Sokoloff 1971: 450 in his review of Yamauchi points out, was only a graphic, not a phonetic variant. Nöldeke, 1875: 69 claimed that this interchange depended on the noun's vocalisation.

16) Kröger 1982: 48, n. 267 where Macuch states, "[e]s kann von mir nicht geklärt werden, ob das in Zeile 3 vorkommende, fragliche rotunda etwas mit dem Chor der Kirche zu tun habe." By inference, this comment may be extended to the inscription as a whole.

17) For this three-quarters life-size statue, see Reuther 1929: 450. Photographs as well as discussion occur in Kröger 1982: 47 and Pl. 12.3. Also Meyer 1929: 24 and Fig. 13.

formal expression of this quotation from Exodus 3[vi] counterbalances the personal tenor of the opening line, "And the Lord said to me", where the language is reminiscent of Psalms. The commencing word of this first part w'mr is also repeated at the end of l.3 where it signals the transition from the second to the third sections.

The fact that the left and right-hand margins, as well as the upper margin of the inscription are intact suggests that it was not a remnant of a larger text. Instead, the sherd may have simply been the medium upon which the scribe tested his pen. Indeed, in fashioning the reed nib to its required angle, a pottery fragment may have been preferable to a piece of paper, not only on account of expense and availability, but also because of the coarser fabric. If the scribe was merely testing his pen, or even his hand, he may have just written a selection of liturgical clauses and biblical quotations that sprang to mind. This type of situation might account for the high proportion repeated words and the disjointed nature of the inscription. Had l.2 been interpreted as nwsy' dqny' "the trial of the pen", such a proposal might receive even more impetus, but can also be applied to the present reading.

Ostracon Kt. W. 295 is a valuable addition to the small, but precious, group of Syriac fragments which have been found in the region of al Hira[18], at Tūlūl al-Ukẖaiḍir, as well as from the monastery site of Ain Sha'ia and the nearby Dukakin caves which were excavated by the *Japanese Archæological Expedition to Iraq*[19]. All of the ostraca, notwithstanding differences that are clearly chirographic, have been written in the script of Nestorian Estrangela and have been dated *circa* the seventh century A.D[20]. Likewise it may be suggested that Ostracon Kt. W. 295 belongs to the same period, even though it might be noted that the Estrangela hand still flourished as late as the thirteenth century A.D[21]. Whilst the inscription does not record a particular event, such as an endowment or dedication, in the history of the church at Qasr bint al Qadi, Ostracon Kt. W. 295 stands as striking testimony to the vigourous daily life of the Church of the East in its Mesopotamian heartland.

Bibliography

Bosworth, C.E.
1983 Iran and the Arabs before Islam, *Cambridge History of Islam, Cambridge*, Vol. 3(1): 593–612.

Brockelmann, C.
1928 *Lexicon Syriacum*, Göttingen. 2nd edition.

Chabot, J.B.
1903 *Synodicon Orientale*, Paris.

Fiey, J.M.
1967 Topography of al-Mada'in, *Sumer*, 23: 3–37.

18) Al Hira, the capital of the Lakhmid dynasty, was located on the right bank of the Euphrates in south-west Iraq, near modern Kufa, while the domains of the buffer kingdom included the regions south-east of the holy city of Karbala. See Bosworth 1983: 597–602 for a succinct survey of Hira and its political history under the Sasanids. Also Shahid 1971: 462–3.

19) *Tūlūl al Ukẖaiḍir*: Finster and Schmidt 1976: 140–1 and Plate 65 for the transliteration, translation and accompanying photograph of the ostracon from Tūlūl al-Ukẖaiḍir. The fourth line of the inscription has been transliterated, with reservation, as dnḥ' l "die aufgeht" (oder "Aufgang"). However, the second letter is clearly a Lamadh, whilst the third character which has been read as a cursive Resh is actually a Kaph, the combination thus producing the reading, dlk' l "that hither". For lk', see Payne Smith 1879–1901: cols. 1655 and 1946. *Ain Sha'ia and Dukakin Caves*: Fujii 1989: 27–88 for a full excavation report. This is supplemented by Hunter 1989: 89–108, which specifically deals with the inscribed material emanating from these two sites. The author has also discussed the inscriptions, with specific reference to their archæological context, in her forthcoming article "Syriac Inscriptions from Hira" to be published in *Oriens Christianus 80*.

20) Finster and Schmidt 1976: 141, n. 77- "[e]r schlägt als Datierung, mit Vorbehalten, das 8.Jh. vor." Hunter in *Oriens Christianus* allocates the inscriptions from Ain Sha'ia and Dukakin caves to a similar time-frame.

21) For this very reason, Macuch in Kröger 1982: 48, n. 267 has declined to offer any definite dating, saying "Aus dem Schriftcharakter lässt sich sehr schwer auf eine Datierung schliessen".

Finster, B. and Schmidt, J.
1968 Sasanidische und Frühislamische Ruinen im Iraq, *Baghdader Mitteilungen*, 8.

Fujii, H. et al.
1989 Excavations at Ain Sha'ia Ruins and Dukakin Caves, *al-Rāfidān*, 10: 1–88.

Hatch, W.H.P.
1946 *An Album of Dated Syriac Manuscripts*, Boston.

Hunter, E.C.D.
1989 Report and Catalogue of Inscribed Fragments: Ain Sha'ia and Dukakin Caves near Najaf, Iraq, *al-Rāfidān*, 10: 89–108.

Kröger, J.
1982 *Sasanidisches Stuckdekor*, Mainz [Baghdader Forschungen Bd. 5].

Lerner, J.
1992 Christianity ii. In Pre-Islamic Persia: Material Remains, *Encyclopædia Iranica*, ed. E. Yarshater, California. Vol. V: 528–30.

Meyer, E.
1929 Seleukia und Ktesiphon, *Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin*, 67: 1–26.

Nöldeke, T.
1875 *Mandaïsches Grammatik*, Halle.

Okada, Y.
1991 Early Christian Architecture in the Iraqi south-western desert, *al-Rāfidān*, 12: 71–83.
1992 Ain Sha'ia and the Early Gulf Churches: An Architectural Analogy, *al-Rāfidān*, 13: 87–93.

Payne Smith, R.
1879–1901 *Thesaurus Syriacus*, Oxford. 2 vols.

Reuther, O.
1929 The German Excavations at Ctesiphon, *Antiquity*, 3: 434–51.
1984 Sasanian Christian churches, in A.U. Pope, *A Survey of Persian Art: From Prehistoric Times to the Present*, Ashiya, Japan: 1977, 3rd edition. Vol. II: 560–66.

Shahid, I.
1971 Al-Ḥīra, *Encyclopædia of Islam*, Leiden. Vol. III: 642–3.

Sokoloff, M.
1971 Notes on some Mandaic Magical Texts, *Orientalia*, 40: 448–58.

Streck, M.
1917 Seleucia und Ktesiphon, *Der Alte Orient*, 16: 1–64.

Yamauchi, E.
1967 *Mandaic Incantation Texts*, Connecticut.

THE CHURCH AT KHIRBET DEIR SITUN

John CURTIS*

It is a great pleasure to write an article in honour of Professor Hideo Fujii, who as Director of the Institute for Cultural Studies of Ancient Iraq at Kokushikan University and as leader of their archaeological mission to Iraq, has made distinguished contributions to the archaeology and history of Mesopotamia[1]. His interests have been wide-ranging, extending from prehistoric times, as shown for example by his excavations at Tell Songor in the Hamrin basin, down to the Parthian period, represented by the magnificent textiles found by him in the Al-Tar caves near Karbala. Even later is the church at Ain Sha'ia near Najaf which was excavated by Professor Fujii and his team between 1986 and 1989. Because of Professor Fujii's interest in early Christian architecture, I thought it would be appropriate to include in his *Festschrift* a preliminary report about a church at Khirbet Deir Situn which was investigated by a British Museum expedition in 1985–86[2].

Between 1983 and 1986 the British Museum expedition working in the Saddam Dam Salvage Project in northern Iraq excavated at six different sites now mostly submerged beneath the lake behind the dam. Three of these sites were Late Assyrian or post-Assyrian (Qasrij Cliff, Khirbet Qasrij and Khirbet Khatuniyeh) and two were Hellenistic (Tell Deir Situn and Grai Darki). It was while working at the two Hellenistic sites in the autumn of 1985 that we were invited to examine the nearby site of Khirbet Deir Situn[3]. The remains clearly represented a collapsed building or buildings, presumably on account of the name a monastery or church, constructed of stone rubble and mortar, and therefore likely to be of medieval or Islamic date. As our programme of research did not then extend to the Islamic period, we were at first reluctant to take on this extra commitment. However, there were several indications that the site might repay some limited investigation.

First, there was some interesting pottery on and around the site, and secondly the site had been previously visited by Fr Jean Fiey, the Dominican priest who has published extensively on Christian monuments in Northern Iraq. In his *Assyrie Chrétienne*, Fiey (1965: II, 620–5) includes an intriguing section about the site. He suggests that Deir Situn should be interpreted as 'the monastery with the (single) column', in which case, so he says, it could have been a foundation of the Stylites, the curious sect named after St. Simeon Stylites (*c.* 390–459 AD), the austere hermit who lived on a pillar for 30 years without ever descending. Fiey goes further and proposes that Deir Situn was founded in about 598 AD by St. Michael, the soldier of Nineveh, on the grounds that he was a renowned Jacobite Stylite who had died in this area.

The story of St Michael is given in a Syriac text preserved in the Vatican Library that describes the history of St Acha. It is eloquently paraphrased and put into its proper historical context by Fiey (1965: II, 621–624). In the course of the long struggle between the Sasanian and Byzantine empires, in AD 572 a Byzantine army besieged Nisibin on the orders of Justin II. In spite of a lengthy siege they were unable to take the city, partly because of dissension amongst their own commanders, and they were obliged to withdraw, pursued by a Sasanian army commanded by Chosroes I himself. The Persians took many Byzantine prisoners, one of whom was Acha, who became the slave of Michael of Nineveh. Michael was in reality a crypto-Christian, who outwardly observed the official religion of the army but

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1) My thanks are due to Dr. St. John Simpson who read through an earlier draft of this paper and made a number of helpful suggestions.

2) The final report on this excavation is being prepared jointly by J.E. Curtis and St. J. Simpson.

3) For brief preliminary reports on the excavations at Khirbet Deir Situn, see Curtis 1987 and 1989.

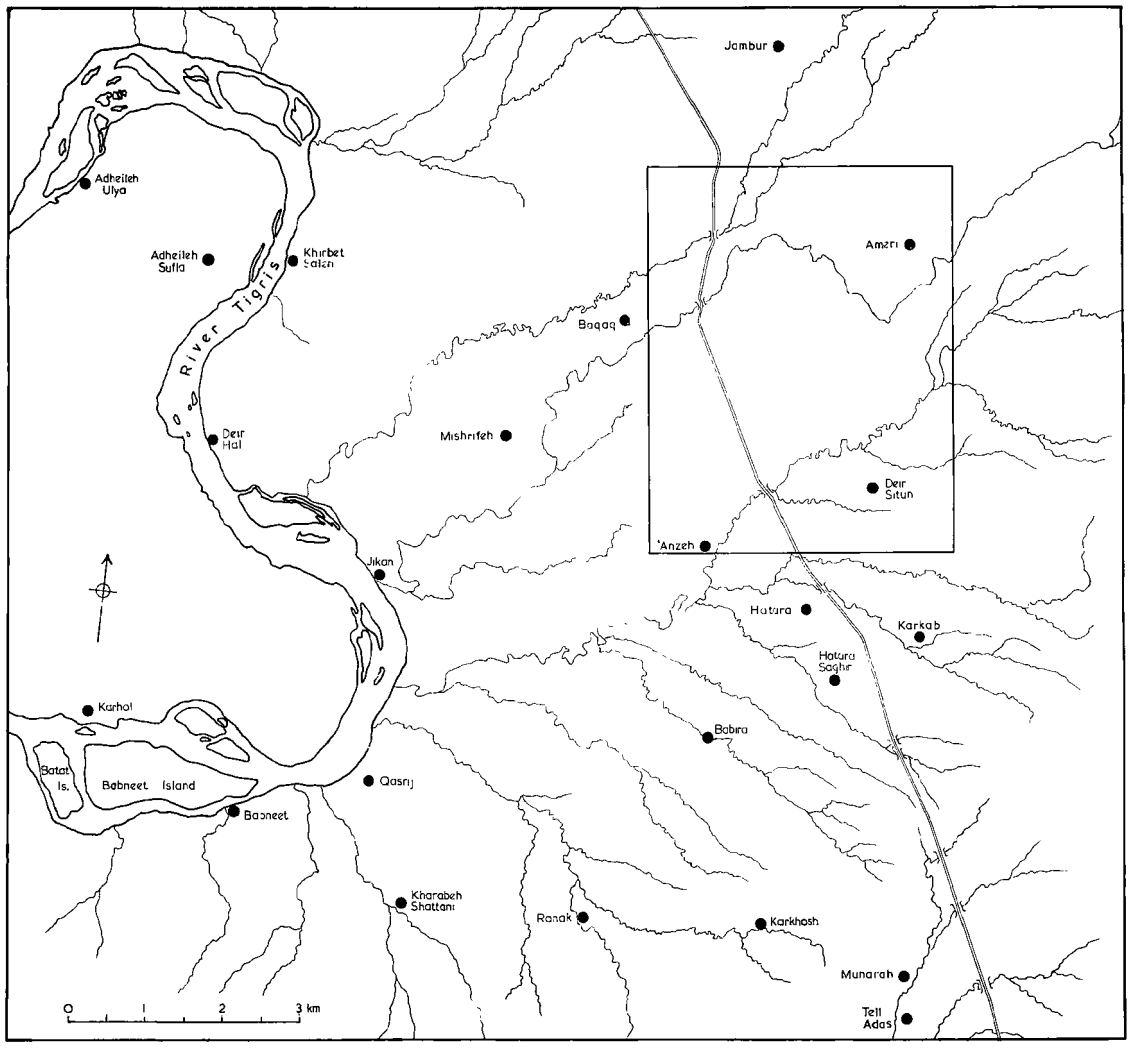


Fig. 1 Part of the area affected by the Saddam Dam Salvage Project showing the location of modern villages. Drawing by Ann Searight.

in fact had a cross hidden in his helmet. Acha was soon officially recruited into the Sasanian army, and he and Michael spent the next eighteen years as soldiers, fighting during the day and passing the night in prayer, covered in ashes and haircloth. At the end of this time they determined to return to the west and live as proper Christians. They founded a monastery (of St Acha)[4] which Fiey thinks was in the neighbourhood of Nisibin, but after five years Michael became homesick and returned to the Nineveh area where he built himself a monastery. This would have been in around AD 598. Within the monastery Michael constructed a column, on which he sat until his death.

It was obviously tempting to test Fiey's hypothesis, and at the same time recover more information about the Sasanian and early Islamic periods in this area. There was also the consideration that the site was going to be flooded, and it obviously deserved to be investigated. If we decided not to work there it was unlikely anybody else would be able to do so. For this reason, we determined to make at least a preliminary investigation of Khirbet Deir Situn. Thus in the autumn 1985 season, John Curtis, Anthony Green and Marian Melnyczek excavated at Khirbet Deir Situn in the period 19th-27th November. The results proved to be so interesting that the expedition returned in autumn 1986 to work solely at Khirbet

4) For St Acha, see Holweck 1924: 9.

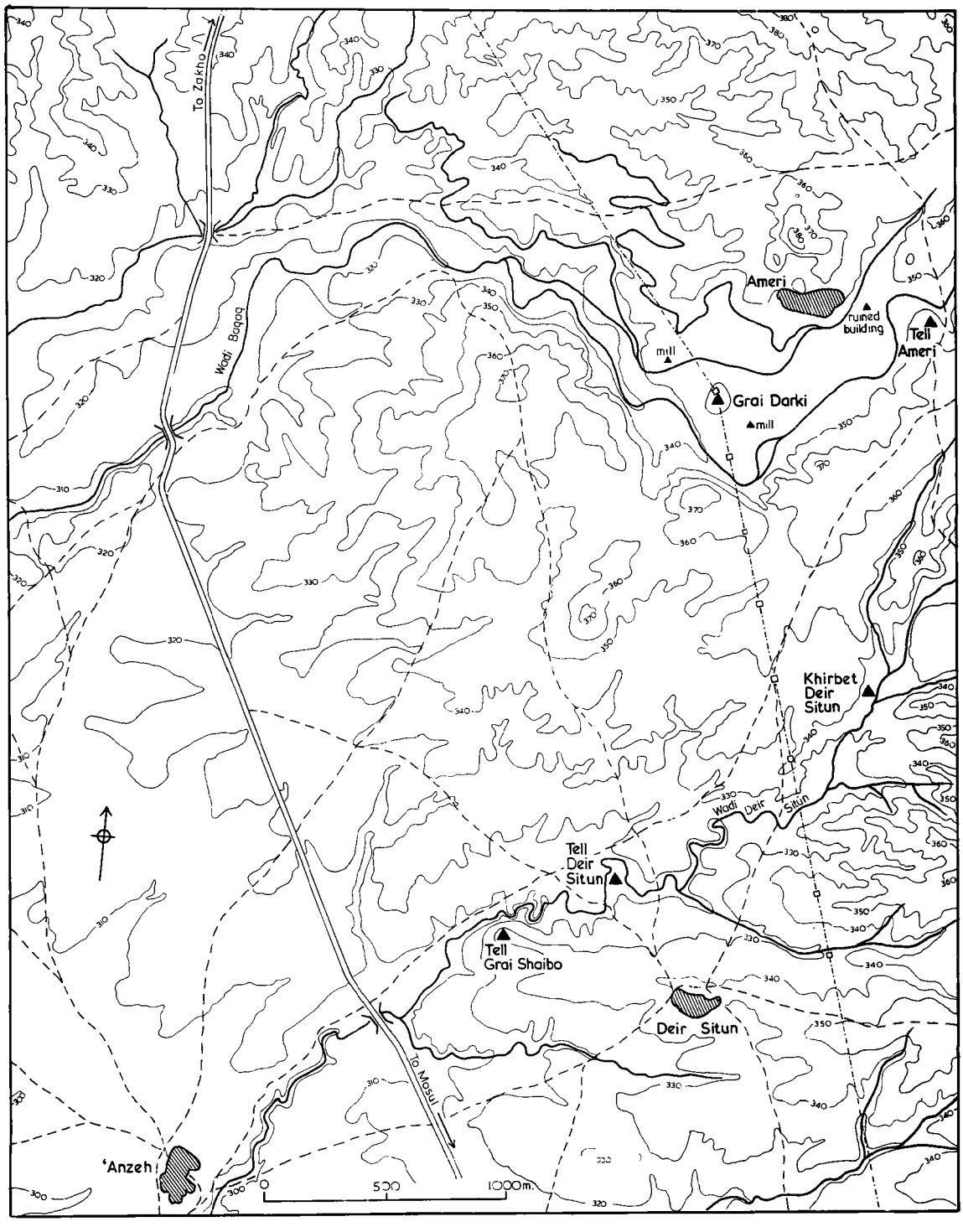


Fig. 2 Khirbet Deir Situn and its environs. Drawing by Ann Searight.

Deir Situn. We worked there from the 25th October to the 8th December. The team comprised John Curtis (Director), Marian Melnyczek and Timothy Matney (Site Supervisors), Ruth Goldstraw (Conservator), Bronwen Morgan (Architect), Helen Mcdonald (Illustrator) and St. John Simpson (Pottery). Throughout our work at Khirbet Deir Situn we enjoyed the support and co-operation of the Iraqi State Organisation for Antiquities and Heritage, in particular Dr Muayyad S. Damerji, Dr Behnam Abu es-Soof, Sd Mohammed Subhi, Dr Abdul Sittar Azawi, and last but not least, our representative, Sd

Mamoon Ghanim Hussain. We are also grateful to the officers of the British Archaeological Expedition to Iraq, Jeremy Black, Warwick Ball and Roger Matthews, who helped in various ways.

Khirbet Deir Situn is about 40 km north-west of Mosul (Figs. 1–2), set in the rolling, hilly countryside nearly 5 km to the east of the Mosul-Dohuk road. The ruins lie to the north-east of the old village of Deir Situn, and are situated on the banks of the same wadi as that running past the Hellenistic site of Tell Deir Situn (Pl. 1a). The site[5] is located on a low bluff to the west of the wadi, overlooking a spring and a cluster of mulberry trees, which is a popular spot with shepherds and goatherds.

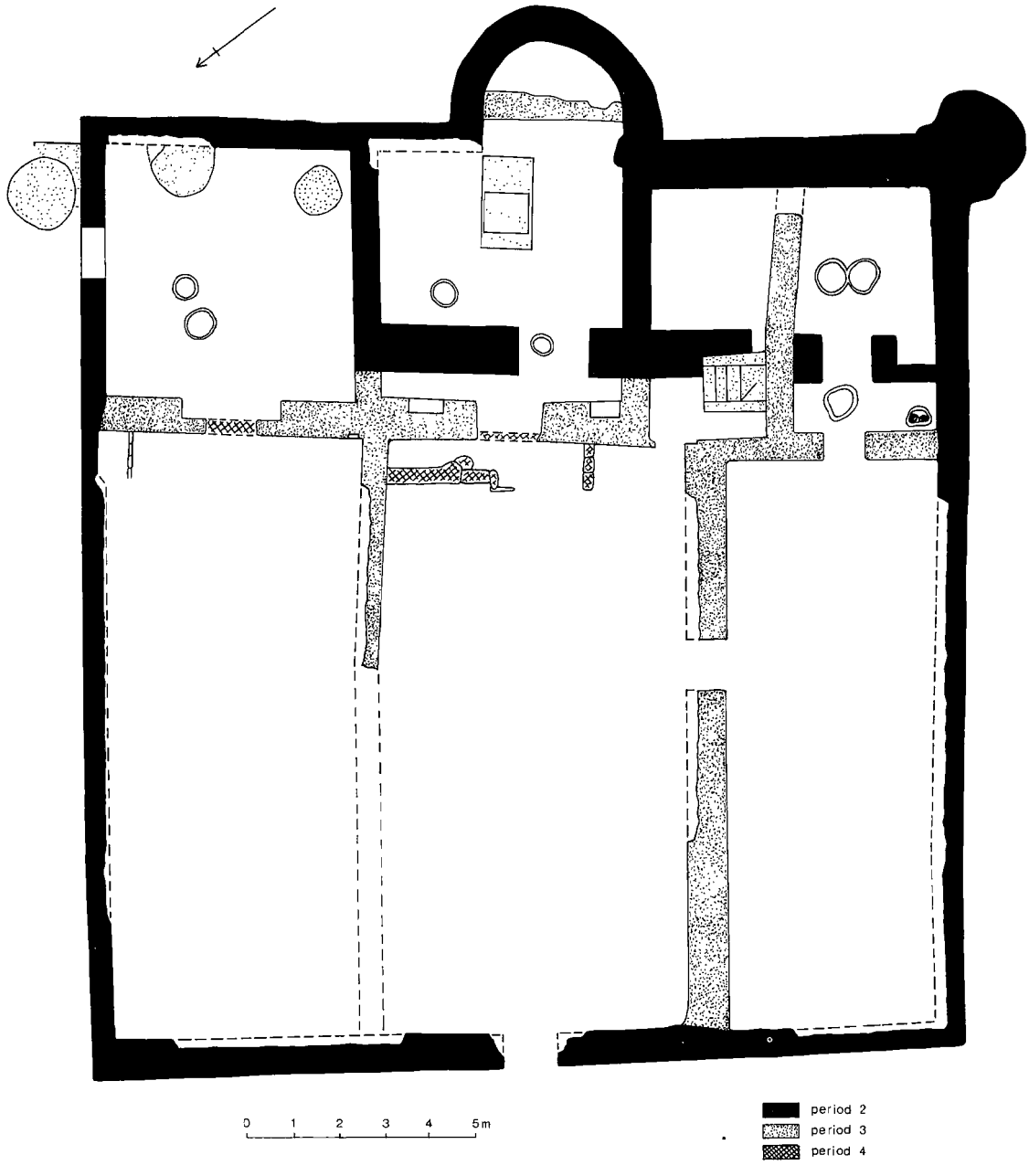


Fig. 3 Plan of the excavated building at Khirbet Deir Situn. Drawing by J.E. Curtis.

5) Khirbet Deir Situn is site no. 30 on the map of 'Archaeological Sites at the Mosul Dam Reservoir' prepared by the State Organisation of Antiquities and Heritage.

As we have said, the surface remains indicated a structure built of rubble and mortar that was much eroded at the east end, where it faced the wadi. Although straightforward from an archaeological point of view, lifting the fallen stones proved difficult, and great care had to be taken as the crevices in the rubble had become a haven for scorpions and snakes. In the east part of the building we were able to clear down to the different floor levels, but in the western part, because of the depth of deposit, it was not possible to do much more than trace the tops of the walls. Excavation showed that the history of the building was much more complicated than first thought, and it can best be described by dealing with each period in turn (Fig. 3, Pls. 1b, 2a).

Period 1

The earliest attested occupation on the site was during the Sasanian period, represented by a red-coloured deposit that underlies the later building. There were no walls or floors definitely associated with this occupation, but it is possible that the floors were removed by the later builders and the walls incorporated in the later structure which would account for their not being distinguished during the excavation. Alternatively, it may be that this reddish deposit represents an external accumulation of refuse mixed with redeposited natural subsoil from elsewhere on the site. In this case, the original building would have been in a slightly different position to its successor, perhaps a little further up the hill to the west and away from the wadi edge. Recovered from the red-coloured deposit was an interesting collection of broken pottery, including sherds of 'smeared ware' and 'brittle ware' that are typical of the Sasanian period. Most interesting, though, was a collection of 140 stamped sherds, of which a number could be joined together (Fig. 4; Pls. 4a-b, 5a-b). On these stamps there is an interesting repertoire of designs including goats, stags, birds, hump-backed bulls, crosses, 'Catherine wheels', and circular geometric designs. Such stamped pottery has been found at a number of other sites in the Saddam Dam Salvage Project, for example at Aqar Babira (Sürenhagen 1987: figs. 2-3) and Qaradere (Roaf 1983: fig. 9/1–5). There is a good collection from Nineveh (Campbell Thompson and Mallowan 1933: pl. LXXVII), including a fine example published by Layard (1853: 591). There is also an almost complete jar of this kind in the British Museum collections, excavated at Birs Nimrud (Borsippa) in Mesopotamia in the last century, stamped with browsing stags (Pl. 5c), but generally such pottery is uncommon. In fact, the collection recovered from Khirbet Deir Situn is the largest group yet found. The purpose of this Late Sasanian stamped pottery is quite unclear: the stamps might have been put on jars containing a particular commodity, or they might be indications of the place of manufacture. It is even possible that their distribution could be restricted to Christian communities, but this is all speculative. There were also a few fragments of glass associated with the earliest phase.

Period 2

During the Islamic Period a large building was constructed on the site, approximately square and measuring 19.85m north-south and 19.50m east-west. It was made from stone rubble held together with gypsum mortar. The east end of the building was divided into three rooms, and in the middle of the east wall was an apse (Pl. 3a). This sort of arrangement, with a large hall or nave and a tripartite division at the east end, comprising a chancel flanked by a room on either side, is fairly typical of early churches. Both the chancel and the room in the south-east corner had walls on the west side through which narrow doorways gave access to the nave. For the room in the north-east corner no corresponding wall was found, but this could have been removed by the later builders. Alternatively, it may be that the plan is irregular, which would suggest that the central room at the front is a chapel within a monastic complex rather than the chancel of a church. It is also curious that the apse is off-centre in relation to the chancel but this might reflect some rebuilding, perhaps of the apse itself, which was not detected during excavation. A few moulded sherds, some potsherds of glazed 'sgraffiato' ware, and a 'barbotine' handle (Pl. 6a) point to a foundation date for this building in the late Abbasid or early Ilkhanid period, that is in the 12th



Fig. 4 Sasanian stamped sherds from Khirbet Deir Situn. Drawings by J.E. Curtis.

or 13th century A.D. There was no pottery that could be certainly ascribed to the Early Islamic period, although sites of this date are known from elsewhere in this rescue project. Alternatively, it is possible that the absence of recognisably early Islamic pottery may be due to its having been dumped elsewhere and sealed under stone rubble.

In a later phase of the period 2 building there were some modifications to the structure. These consisted of a later gypsum floor in the chancel, and some alterations to the south-east corner of the building. At this point where the outside ground level is sloping away steeply towards the spring it seems likely that the corner of the building collapsed, and was rebuilt and buttressed on the outside with a substantial mass of stones in which two wall faces could be distinguished. They were built leading out from the corner, presumably to make the buttress as strong as possible.

Period 3

In this period there was a substantial rebuilding of the earlier structure. The technique of construction was the same as in period 2, using rubble and gypsum mortar with a gypsum rendering, but the building of this date is characterised by a curious architectural technique which made use of drafted corners and 'dadoes' fashioned in plaster. The basic ground-plan of the earlier building was maintained, but the rooms at the east end were enlarged by moving the back wall further to the west, and it now continues to form the western boundary of the north-east room. This wall is cut by four doorways, the most elaborate being that in the north-east room which has reveals on either side. In addition, a partition wall was built in the south-east room with a spiral staircase abutting it on the east side (Pl. 3b). These rooms at the front of the church apparently had barrel-vaulted roofs, to judge from the large fragments of collapsed roof found on the floor in the south-eastern room. In the chancel there are large niches on either side of the doorway in the west wall (Pl. 2b) and there is a low rectangular structure in the front centre of the room that probably marks the site of an altar. Whether or not the apse was still in use at this time is unclear, but a roughly built wall along its front may date from this period. It might represent secondary blocking, but it could also be part of the foundations of the apse, in which case it would be an original feature. At this point the site is badly eroded, and either interpretation is possible. Also associated with period 3 are two large sunken features, perhaps grain bins, and a semicircular plinth of mortared rubble against the front wall of the building. Its purpose is unclear, but it is possible that this plinth represents a font placement, in which case this south-east room would have served as a baptistry. If so, the south-east room could have been the sacristy. The exact date of some 'tannurs' or ovens found in this south-east room is uncertain, but they could belong with this phase of occupation. In this connection, it is interesting to note that in some Assyrian churches the sacristy serves as the "office of the baking of the bread" (Wigram 1929: 201). Such rooms are "furnished with a fireplace and oven" for the baking of the eucharistic bread. Also in this period, walls were built the length of the nave dividing it into three parts. However, the floor-level in the nave was only reached at the east end, so the precise arrangement of features here remains uncertain.

Period 4

The period 4 occupation is represented by the flimsy walls blocking the western doorways of two of the rooms at the front of the building, some rudely constructed walls in the former nave and a number of 'tannurs' or ovens in the rooms at the east end. It is possible that the rooms at the east end of the complex had partially collapsed prior to Period 4, or at least they were no longer roofed over. In any case, it seems clear that the function of the building changed at this time; it was perhaps inhabited by people who took advantage of the surviving structure merely to provide shelter. Dating from period 4, but after there was a build-up of deposits on the floor, is a group of nine pottery vessels, found in an alcove under a collapsed section of the spiral staircase (Fig. 5). These were smashed 'in situ' when the staircase collapsed, providing us with a possible date for the final occupation of the building. A number of these vessels are hand-made, with crude incised decoration and sometimes small panels or spots of green glaze (Pls. 6c-d). This sort of coarse, hand-made pottery is quite common at Khirbet Deir Situn and has also been found at other sites in the Eski Mosul Dam Salvage Project, for example at Baqaq 3, a short distance to the north-west of Khirbet Deir Situn. Here there was a caravanserai, built of rubble



Fig. 5 Pottery vessels found beneath the collapsed staircase at Khirbet Deir Situn. Drawings by J.E. Curtis.

and gypsum mortar and with 'drafted corners' just as in the church at Khirbet Deir Situn. It was provisionally dated by the excavator, Sd Kerim Toma, to the Ilkhanid period[6]. Sherds of this pottery were also found in the large sunken feature or grain bin outside the north-east corner of the building, in association with a coin and a base of blue-and-white frit ware, decorated with what is probably a representation of a cypress tree (Pl. 6b). This type of ceramic can be well dated and this base is probably of late 15th century date. Unfortunately the coin is in poor condition, and one surface is completely abraded. On the other side there is a 4-line Arabic inscription in Kufic script. This, together with the size of the coin (diameter 2.15 cm., thickness 0.4 cm), suggests that it might date from one of the following dynasties: the Zangids (AD 1127–1222), Badr-ad-Din Lulu (AD 1222–1259) or the Seljuqs of Rum (AD 1077–1307)[7]. Whatever its exact date might be, the coin certainly seems to be earlier than the blue-and-white base, in which case the latter must be used for dating this deposit and the associated pottery. We may conclude that the crude incised pottery with panels of green glaze is unlikely to date from before the late 15th century or early 16th century AD, and could be even later. It might well be contemporary with the final abandonment and collapse of this building.

Period 5

Over the area of the site, usually in the topsoil, were found more than 40 moulded clay tobacco pipes or fragments of pipes. There are some typical Turkish clay pipes where the head is made in one piece with the stem-socket, but the majority of them are of "poppy-head" type, so-called because they resemble an inverted opium poppy head. They have a hole in the side of the bowl for inserting a tube, and are often embellished with fluted decoration. Such pipes are comparatively modern, dating from the last two or three centuries, and consequently have often been dismissed as being of little interest. As a result, little is known about their date, distribution and place of manufacture. This is especially true of the "poppy-head" pipes, of which a relatively small number of examples has been published. A detailed study of these pipes has been prepared by Dr. Timothy Matney, which will appear in the final report. Probably of similar date to the tobacco pipes are fragments of glass bracelet of which nearly 20 were found. Some were of plain coloured glass, but the more elaborate examples have brightly-coloured patterns on the outside surface. These are equally as interesting as the pipes and potentially just as informative. Associated with the pipe fragments and glass bracelets were potsherds again of comparatively modern date. All this material derives either from shepherds bringing their flocks to the nearby spring or from a former settlement on the hillside to the south-west of the excavated area where the pottery appears to be later than that associated with the monastery site.

Conclusions

The original occupation of the site of Khirbet Deir Situn was during the late Sasanian period, probably 6th-7th centuries AD, but there are no structural remains definitely associated with the deposits of this period. Either they were further to the west, or they were incorporated in the later building and are not now recognisable. If this is the case, it is possible that the plan of the Sasanian building is preserved in that of the later Islamic church. If this is so, how does the plan of the church at Khirbet Deir Situn compare with other early churches? We have already referred to the church excavated by Professor Fujii and his team at Ain Sha'ia near Najaf (Fujii *et al.* 1989), perhaps dating from as early as the late 7th century AD. Like Khirbet Deir Situn, this has a tripartite sanctuary and a triple-aisled nave. At the east end of the chancel, however, there is a rectangular niche rather than a semicircular apse. Plans of other early churches in Iraq have very conveniently been gathered together by Yasuyoshi Okada (1991: Fig. 2). We can see that the churches at Ctesiphon and Hira are broadly comparable in that they have

6) Personal communication.

7) Thanks are due to Mrs H.W. Brown, formerly of the Heberden Coin Room, Ashmolean Museum, Oxford, and Dr. Venetia Porter of the Department of Coins and Medals, British Museum who have seen and commented on photographs of this coin.

three rooms at the front with relatively narrow entrances from the nave, but access to these churches is from the sides and not from a doorway at the west end. The churches at Tell Museifneh, also in the Eski Mosul Dam Salvage Project, and Qasr Serij, to the north-west of Mosul, both have apses at the east end, as Khirbet Deir Situn, but these churches are of the basilica type consisting of a large hall with an apse at one end which is really an extension of the hall. Lastly on the subject of the plan, it is interesting that a number of the medieval churches in Mosul, some of them with reputedly early foundation dates, have ground-plans that can be roughly paralleled at Khirbet Deir Situn (Fiey 1959).

If the church at Khirbet Deir Situn was founded in the Late Sasanian period, which is entirely plausible, it might not have survived for very long into the Islamic period, as many monasteries did not fare well at this time. It could have been abandoned, and then refounded in the 12th or 13th century AD, either on the same spot or in a slightly different location. This foundation was either a church associated with a nearby settlement or, perhaps more likely, a monastic establishment. The practice of moving the position of churches and monasteries is well attested, and can be seen for example at the monastery site of Mar Behnam near Nimrud. Later Deir Situn fell into disuse as a church, and was occupied by people who built crude partition walls and dug a number of bread ovens into the earlier floors at the east end. The building finally collapsed probably in the late 15th or early 16th century AD.

No evidence was found to support Fiey's hypothesis that the name of the site reflects a monastery with a column, but the normal practice in Stylite foundations would have been to site the column in the courtyard facing the main west door of the church. However, we were unable to clear this area because of the depth of accumulated rubble, so the possible presence of a column could not be verified. In fact, there is no certain evidence for any Stylite monastery in the vicinity of Mosul[8], and nor can we even be sure that this establishment belonged to the Syrian church, to which the Stylites were attached. It is also possible that it was a Nestorian foundation, especially as the Nestorian church was particularly strong in the area around Nineveh. The Syrian church, on the other hand, was more securely established in north-east Syria and south-east Turkey. It is very much to be hoped that in due course textual evidence will be found that provides the answer to this intriguing question, as well as giving a firm foundation date for the church at Khirbet Deir Situn.

Bibliography

Campbell Thompson, R., and Mallowan, M.E.L.
1933 'The British Museum excavations at Nineveh, 1931–32', *Annals of Archaeology and Anthropology* XX: 71–186.

Curtis, J.E.
1987 'British Museum excavations 1983–1985', *Archiv für Orientforschung* XXXIV: 201–206.
1989 'Case of the missing column', *British Museum Society Bulletin* 60: 7–9.

Fiey, J.M.
1959 *Mossoul chrétienne*, Beirut.
1965 *Assyrie chrétienne: Contribution à l'étude de l'histoire et de la géographie ecclésiastiques et monastiques du nord de l'Iraq*, 2 vols, Beirut.

Fujii, H., *et. al.*
1989 'Excavations at Ain Sha'ia ruins and Dukakin caves', *al-Rāfidān* X: 27–88.

Holweck, F.G.
1924 *A Bibliographical Dictionary of the Saints*, St. Louis and London.

Layard A.H.
1853 *Discoveries in the Ruins of Nineveh and Babylon*, London.

8) Personal communication Dr. Chase F. Robinson (letter of 28/8/91).

Okada, Y.
1991 'Early Christian architecture in the Iraqi south-western desert', *al-Rāfidān* XII: 71–83.

Roaf, M.D.
1983 'A report on the work of the British Archaeological Expedition in the Eski Mosul Dam Salavage Project from Noevember 1982 to June 1983', *Sumer* XXXIX: 68–82.

Sürenhagen, D.
1987 'Hirbet Aqar Babira 1985', in *Researches on the Antiquites of (the) Saddam Dam Basin Salvage and other Researches*, Baghdad: 129–131.

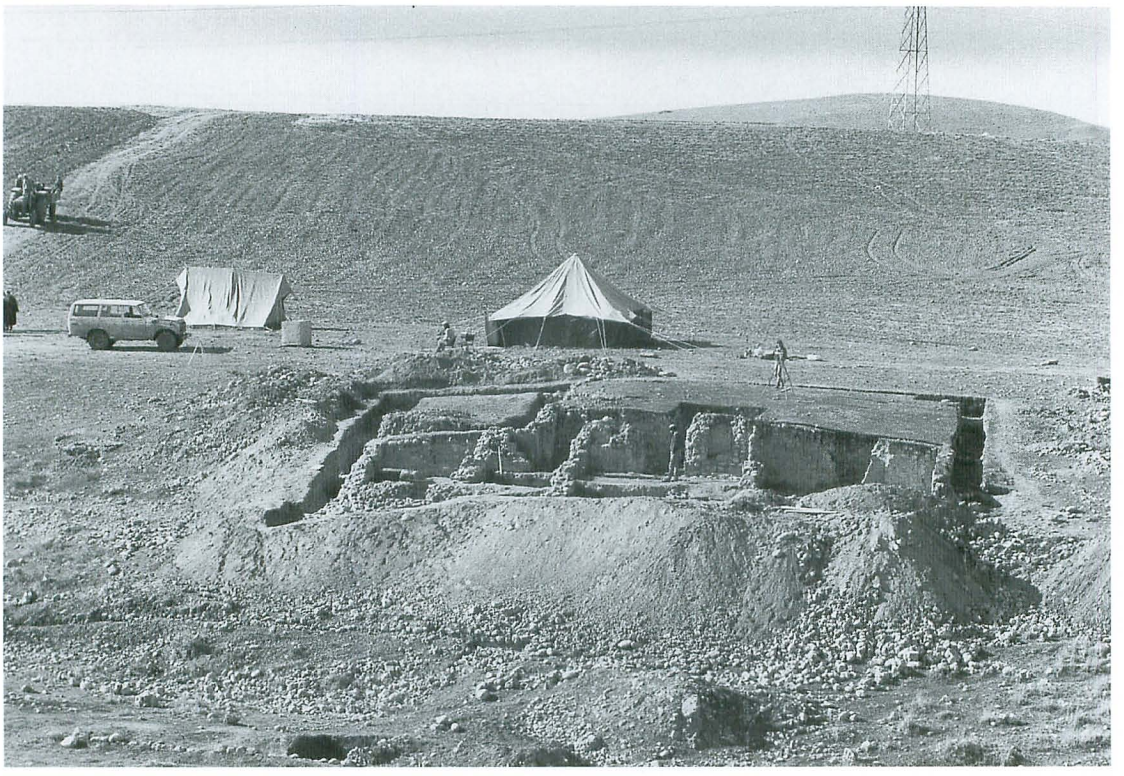
Wigram, W.A.
1929 *The Assyrians and their Neighbours*, London.



a The site of Khirbet Deir Situn viewed from the west, with the spring in the foreground. The rectangular enclosure below the site is probably modern.



b Excavations at Khirbet Deir Situn, viewed from the west.



a The excavated building at Khirbet Deir Situn, viewed from the west.



b The west side of the chancel at Khirbet Deir Situn showing the doorway through to the nave with niches on either side.



a The apse at the east end of the chancel at Khirbet Deir Situn.



b The remains of the spiral staircase at Khirbet Deir Situn.



a Sasanian stamped pottery from Khirbet Deir Situn.



b Sasanian stamped pottery from Khirbet Deir Situn.

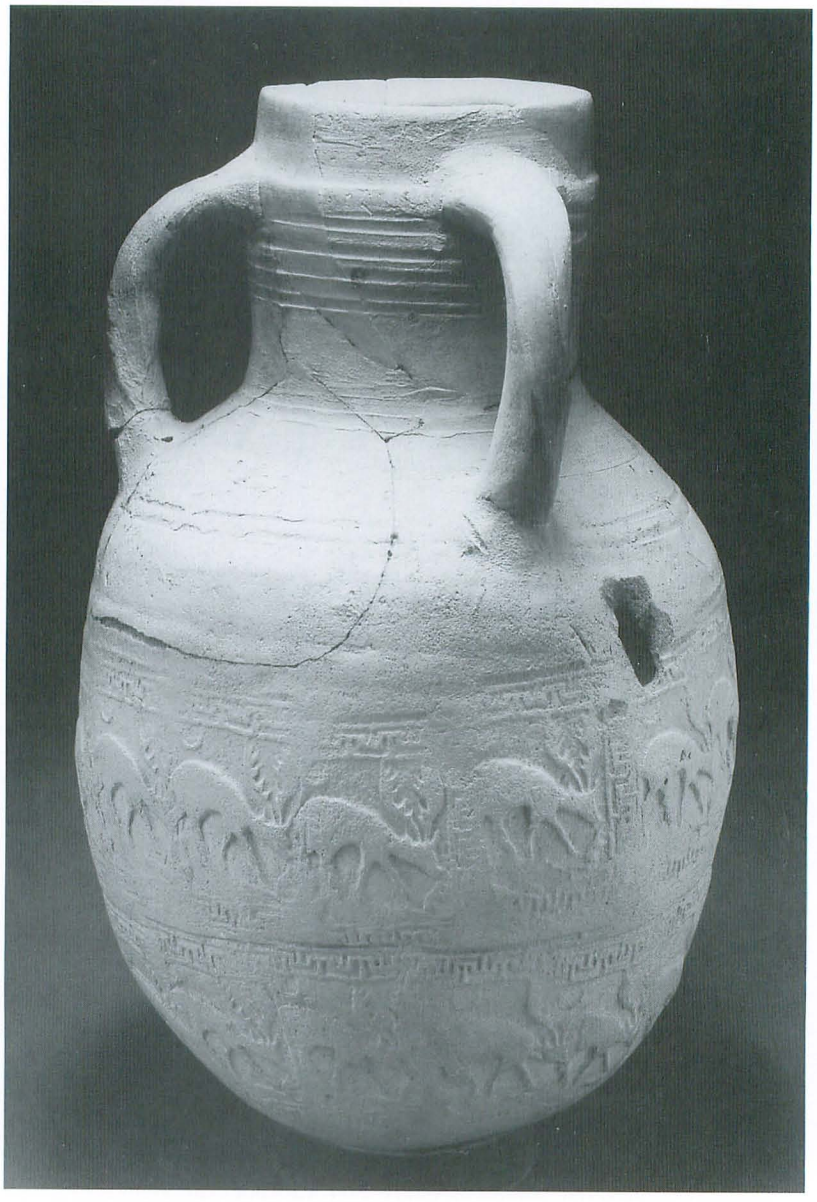
Pl. 5



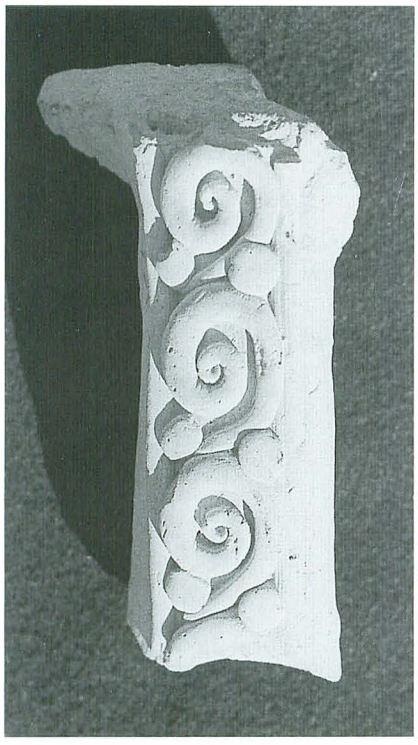
a Sasanian stamped pottery from Khirbet Deir Situn.



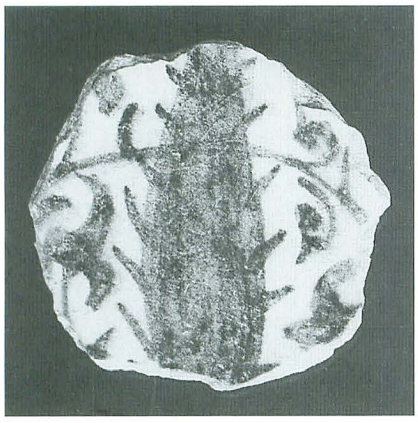
b Sasanian stamped pottery from Khirbet Deir Situn.



c Pottery jar with stamped designs from Borsippa in Mesopotamia. British Museum 92394B.



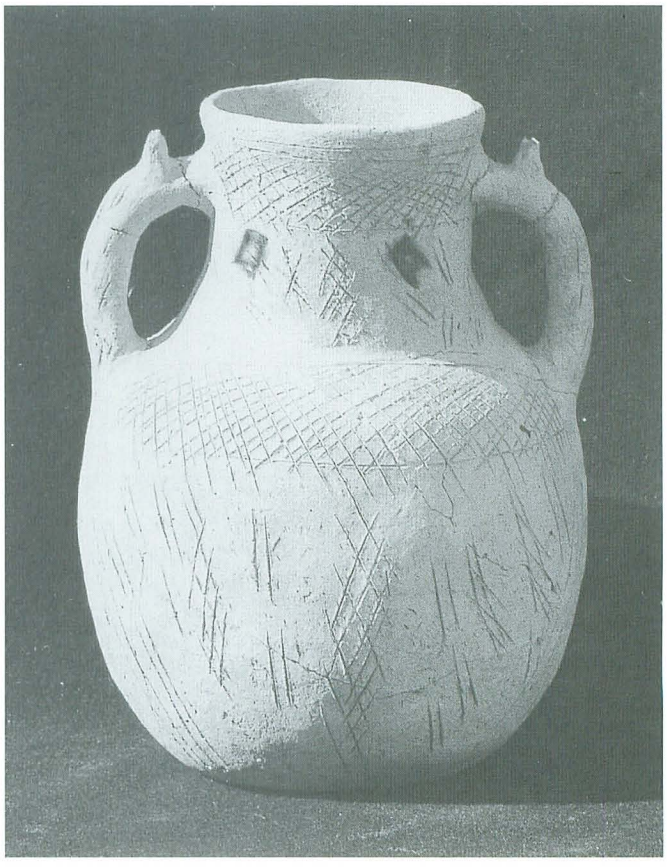
a Pottery handle with 'barbotine' decoration from Khirbet Deir Situn.



b Base of blue-and-white frit ware from Khirbet Deir Situn.



c Handmade pottery jar with incised decoration and panels of green glaze, from Khirbet Deir Situn.



d Handmade pottery jar with incised decoration and panels of green glaze, from Khirbet Deir Situn.

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〔大岡　1987: fig. 12; Naharagha 1981: 45ff〕

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1. The manuscript should be typed on one side only of A-4 size paper.
2. On the front page, to the exclusion of the text, the title of article should be written as well as the name, address and position of author(s).
3. Please be sure to prepare necessary drawings and tables on separate papers one by one (less than 23.5× 16.0 cm each in size of completion of printing), with explanations and consecutive numbers respectively, and compile them aside from the text. In addition, designate, on the margin of the text, where each one should be inserted.
4. The drawings should be inked over, then covered. In general, photo typesetting of letters, numbers, etc. in illustrations is done by the editorial board.
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正 誤 表 CORRIGENDA

(Vol. XVII)

		誤 errors	正 corrections
p. 54	*l.* 28	unequivocal	equivocal
p. 85	Figure caption	Fig. 7 下 Pottery	Fig. 7 Pottery
p. 92	*l.* 40	〈in Figs. 10〉	〈in Fig. 10〉
p. 145	*l.* 35	Grandrelle thread[1)] of sheep fiber and camel fiber	Grandrelle thread (see Fujii and Sakamoto [1990: p. 59, Note 1]) of sheep fiber and cashmere goat fiber
p. 145	*l.* 36	[Fujii and Sakamoto 1990: p. 59, Note 1)]	[*ibid.*: p. 45] (Reference, Fujii and Sakamoto [1990: p. 45, *l.* 37], needs a correction from camel to cashmere goat)
p. 171	*l.* 15	64	64.0
p. 292	奥付	(平成七年)	(平成 8 年)

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Postscript

This volume, presented to Professor Fujii on the occasion of his 70th birthday, is composed of articles covering enormously wide range of subjects. I feel myself honored that I could have the occasion to edit such a momorable volume. As a general rule, the articles are printed according to a chronological order of the subjects they cover. The completion of this volume is absolutely the result of everyday cooperation of all associated with our institute and heart-warming contributions from superior researchers working in West Asian history. I sincerely thank all of the contributors for their kind cooperation toward the completion of this special volume of *al-Rāfidān*. (Katsuhiko Ohnuma)

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VOLUME XVIII 1997

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THE INSTITUTE FOR CULTURAL STUDIES OF ANCIENT IRAQ
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