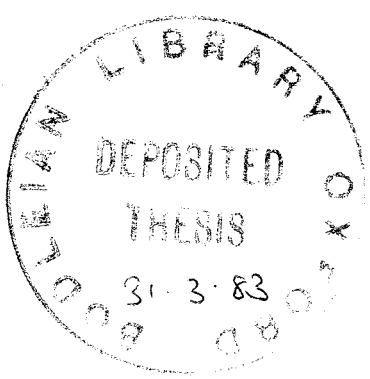
Town Planning and Domestic Architecture in Ancient Mesopotamia from Earliest Times until the Middle of the Second Millennium B.C.

by

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TOWN PLANNING AND DOMESTIC ARCHITECTURE IN ANCIENT MESOPOTAMIA FROM EARLIEST TIMES UNTIL THE MIDDLE OF THE SECOND MILLENNIUM B.C.

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After an introduction setting out the aims of the study in examining ancient housing for evidence of population and social structure, Chapter 1 describes the geographical setting of ancient Mesopotamian civilisation and outlines the various resources and their uses in building. Chapter 2 deals with ethnoarchaeology, the use of parallels drawn from modern Near Eastern villages in the interpretation of ancient settlements, and describes a survey of modern villages in the Khabur region of northern Syria, concluding that such surveys are most valuable in providing insights into traditional technology. Methods of calculating settlement population are considered in the light of existing knowledge of ancient demography and society. In Chapter 3 the material from the early prehistoric periods is examined and possible links between the architecture of the 'proto-Hassuna' and Hassuna cultures and the Samarra and 'Ubaid cultures are traced, although the origins of the Samarra and Halaf cultures remain obscure. Chapter 4 points out the absence of excavated evidence for domestic architecture from 'Ubaid sites in southern Mesopotamia but compares the distinctive house type found in the north with the 'Tripartite' houses of the Uruk period which are found as far west as Habuba Kabira. For the early historical periods, Chapter 5 discusses the emergence of the square-plan house with rooms arranged around a central courtyard and considers the implications of variations on this plan in terms of family structure and population. Similar plans from the Ur III to Old Babylonian periods are described in Chapter 6 and the Larsa period housing areas at Ur are considered in the light of an American study of contemporary houses and their texts at Nippur. Chapter 7 deals with the relatively sparsely-represented period of Kassite rule and points out that the houses at the northern site of Nuzi represent a distinctly different type of dwelling from the better-known courtyard house. In the conclusion the archaeological evidence is summarised and discussed in terms of the current interest in ethnoarchaeology and the question of continuity in Mesopotamian cities and domestic architecture is considered.

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INTRODUCTION

The idea that vernacular architecture, like other aspects of material culture, reflects the structure of the society that produces it, though a commonplace among anthropological and architectural theorists (e.g. Levi-Strauss, 1963; Rapoport, 1969; Oliver, 1969, 1975), has only recently begun to be applied to ancient houses. Within the last decade American archaeologists such as Watson (1978, 1979) and Kramer (1979) have begun to graft the techniques of anthropology and ethnography to those of archaeology to produce the hybrid discipline ethnoarchaeology, in an attempt to draw systematic parallels between ancient and modern Near Eastern housing. Hitherto, architectural studies in ancient Mesopotamia had concentrated on buildings in the 'grand design tradition', that is, on religious and administrative buildings. The expense and effort involved in excavating a large area of housing produced an understandable concentration on the relatively compact areas and coherent plans of temples and palaces, and those scholars who have attempted to investigate the institutions of ancient society have done so, for the most part, on the basis of tablets found in these buildings (e.g. Gelb, 1967, 1972; Diakonoff, 1959, 1972; Harris, 1975).

Extensive areas of housing have nevertheless been excavated, for example at Tell Asmar and Ur, and many other sites have produced individual house plans. The time seemed ripe for a comprehensive study of Mesopotamian domestic

architecture from the earliest villages to the Kassite period, when there is a prolonged hiatus in the record at many sites. If the proponents of structuralism are correct, then not only the arrangement of fittings and rooms within each house, but the relationship of structures to one another and the overall use of space within a settlement should carry implications about the nature of the culture which built them. Using controlled comparisons with modern villages in the area, it was hoped to derive information on aspects of ancient life such as population density, family structure and size, and differences in wealth and status and to detect such geographical variations or chronological developments as may have existed. The excavated remains of ordinary housing should provide a counter-balance to the evidence of the texts, which might be expected to produce data biassed in favour of the wealthier and more powerful strata of society. Finally, by providing a corpus of domestic architecture and indicating its potential as a source of information, some incentive may be provided for future excavators to tackle those areas and periods for which information is particularly sparse. With very few exceptions, only more or less complete dwellings for which adequate plans exist have been included.

C H A P T E R 1

The Background to Settlement.

1. Geography, Climate and Environment.

Two hundred million years ago the area of the Near East was covered by the great Tethys Sea. To the north and south lay two vast plates of land, known as Laurasia and Gondwana-land, themselves part of the still larger land mass called Pangea. Their erosional sediments, washing into the sea, trapped the sea life which was ultimately to form petroleum and which accounts for the vital importance of the area to-day. In the course of time convection currents in the earth's crust caused spreading to take place, and by sixty-five million years ago spreading action from Gondwanaland had given rise to the plate fragments known as Proto-Iranian, the north-eastwards movement of the Indian plate, the severe reduction in width of the Tethys Sea and the compression and uplifting of its sediments. Further spreading in the area of the Red Sea - Gulf of Aden separated a large Arabian plate which, moving north-east against the Iranian plates, raised the main folds of the Zagros Mountains while causing the north-eastern edge of the Arabian plate to be consumed below the south-western edge of the Iranian (Fisher, 1950).

The study of plate tectonics is of relatively recent origin, and Fisher's summary of the processes at work in creating the land forms of the Near East is already subject

to modification, for example from Ambraseys (1978, 207), who has suggested that seismic activity is incompatible with the formation of the Zagros by a crustal plate dipping under Central Iran. The evidence rather indicates that the area is composed of 'non-rigid plates', zones of a fine mosaic structure capable of undergoing deformation without having to release large amounts of energy in the form of earthquakes. Future research may throw more light on details such as this, and, in particular, may provide information on the formation of the Tigris-Euphrates-Karun delta.

Whatever the precise details of the long-term processes which created it, the present Tigris-Euphrates basin can be described as a wide, crescent-shaped depression about 1200 kilometres long and 400 kilometres wide running north-west/south-east into the Arabo-Persian Gulf of which it is a continuation. To the north and east it is bounded by the foothills of the Zagros, to the south and west by the desert. The term 'Mesopotamia', originally applied by the classical geographers to the upper part of this basin (the modern Jezirah - 'the island'), has now come to be applied to the whole of the Tigris-Euphrates basin from the mountains to the Gulf (fig. 1).

The rivers Tigris and Euphrates rise not far from each other in the Turkish mountains west of Lake Van and are fed mainly by winter precipitation in the mountains, in particular by the melting of winter snows. From its source, the Euphrates first flows southwards to enter the north Syrian

plain not far from Carchemish and then changes direction to the south-east to be joined by its major tributaries, the Balikh and the Khabur. Over this part of its course, the river is flowing in an incised valley well below the surface of the adjacent plateau, and cultivation is therefore confined to a strip from 5 to 10 kilometres wide along the valley bottom. After its confluence with the Khabur, the Euphrates receives only insignificant storm-water drainage from the desert to the south-west; its catchment area is therefore a very compact one, and over the remainder of its long course evaporation losses are great.

A low cliff line from Hit on the Euphrates to Samarra on the Tigris marks the point at which the rivers enter the alluvial plain. Here the Euphrates is higher in its bed than the Tigris, a useful factor in the construction of irrigation canals, while further downstream the position is reversed. Once in the alluvium, both rivers meander and under natural conditions would deposit their sediments to form levees. Between the high banks of the levees the rivers flowed above the level of the surrounding plain. In times of flood the rivers would break through the levees to enter the lower basins on either side and a new course would be established. Over the 700 kilometres from Baghdad to the head of the Gulf the fall is only 34 metres, decreasing towards the south-east. In the lowest part of the delta plain the rivers therefore meander more widely and split up into many branches whose levees are only slightly higher than their basins and which silt up and change course easily. The

rivers finally lose themselves in an area of lakes and marshland from which as little as 5 kilometres^3 out of the 325 kilometres^3 of their combined waters reaches the Gulf through the Shatt-el-Arab.

Before the construction of modern engineering works which have altered the flow, the lowest point of the Euphrates occurred in September, rising over the winter months of November, December and January, with rapid fluctuations in level, to a peak in April or May, after which the river once again fell steadily through the summer to the September low (Ionides, 1937). Because of its great length and relatively restricted catchment area, rises in level on the Euphrates were more predictable, less rapid and less drastic than those on the Tigris.

The Tigris is very different in character from the Euphrates, with a shorter course and a wider catchment area. From its source in the mountains it flows south-east into the northern uplands of Mesopotamia. Its course follows closely the western edge of the Zagros range and it receives many tributaries from the mountains on its left bank, the major ones being the Greater and Lesser Zab, the Adhaim (which is practically dry in summer), the Diyala and finally the Karun. In addition to these surface tributaries the Tigris is constantly reinforced by invisible infiltration from the hills. The pattern of flow is broadly similar to that of the Euphrates, but the peak falls slightly earlier, usually in April, and the volume is greater - almost double in the flood

months - and is carried in a narrow bed. The range and speed of fluctuation are also much greater, as the Tigris responds very rapidly to conditions in the nearby mountains, and until recently the river was prone to sudden and serious flooding. The speed of the current (and the presence of rapids) made navigation much more hazardous than on the more placid Euphrates, but some traffic made its way downstream in the form of keleks, timber rafts buoyed up with inflated skins.

Like the Euphrates, the Tigris in its upper valley is deeply entrenched and, except in the extreme north where its course is within the zone of rain-fed agriculture, settled cultivation is possible only where the valley widens sufficiently to provide an irrigable strip. As the Tigris follows the western fringes of the Zagros, however, the rolling countryside on its left bank is less barren than the landscape through which the Euphrates flows over most of its course. Once in the flat alluvial plain, as described above, the Tigris meanders towards the marsh area from which little of its water escapes to the Gulf.

In the first half of this century it was widely accepted that the shore of the Gulf had originally lain much further to the north, in the vicinity of Baghdad, but that the silt-bearing rivers Karkheh and Karun flowing west from Iran had pushed forward their deltas to close off the head of the Gulf, creating a vast lake now partially filled by the Tigris and Euphrates with their own sediments. This view was first challenged by Lees and Falcon (1952), who argued that, had

the rivers been discharging their sediments into a stable basin, the marshes and depressions of the area would long since have been filled. Rather, the evidence they produced seemed to indicate that in the past a fine balance had existed between subsidence and sedimentation. The broad and dominant downwarping was seen as episodic in nature and linked with minor areas of uplift.

The ideas of Lees and Falcon received support from subsequent researchers such as Mitchell (1958), who produced additional geological evidence in support of their theories. Although widely accepted, however, their ideas continue to be discussed and modified. Recent work in the Gulf (Nützel, 1975) has provided information on sea levels, which during the maximum cold of the last Ice Age, c. 14,000 B.C., fell to the edge of the shelf in the Gulf of Oman, now 100 metres below sea level. From this low point the shoreline rose spasmodically until during the climatic optimum, c. 3500 B.C., when temperatures were perhaps 2 - 3°C higher than at present, it rose to about 3 metres above the present level before retreating once more. Minor oscillations in level probably continued after the present level was reached. This very considerable rise in sea level at the end of the last glaciation would have required some readjustment by the major rivers after their long period of downcutting, creating favourable conditions for sedimentation in the lower plain. There would probably have existed by 4000 - 3000 B.C. marsh conditions similar to those prevailing in the south of Iraq today, and as Larsen has pointed out (1975, 57), early

settlements in marsh or riverine areas, besides leaving few archaeological traces, would now be covered by a thick layer of silt, a factor which may explain the comparative scarcity of sites to the south of Nasiriyah.

More recently, Larsen and Evans have cast some doubts on the role of tectonic movements in the area of the head of the Gulf. They argue that the area is tectonically stable, and conclude that present landforms in the area have been produced by the interplay of many forces, some as yet imperfectly investigated and understood; both cultural and climatic changes may have affected run-off and hence sedimentation, and subsidence may be attributable to the compaction of sediments rather than to downwarping (1978, 238). Clearly this is a subject which will continue to be investigated and discussed for some time to come, but for archaeologists the salient facts seem to have been established; so far from being situated in the vicinity of Baghdad, the shoreline of the Gulf has not in recent times risen more than 3 metres above its present level, which it reached not long after 3500 B.C., and during the height of the last glaciation it retreated some distance to the south.

The extensive region of lakes and marshes in the extreme south of Mesopotamia has probably altered little since its first occupation by man (fig. 2). Over much of the area the water is shallow, only 1 or 2 metres deep, and the waterways are hemmed in by great banks of giant reeds up to 6 metres high, which shelter wild boar and wildfowl. Reeds, in the

form of a type of matting which is widely used for roofing, provide one of the chief exports of the area, and houses in the Marshes are built of reed matting lashed to a framework of bundles of reed and founded on a sandspit or on piles of brushwood. Fish are plentiful and so, unfortunately, are insects. It is now a great date-growing region - Iraq produces about 90% of the world's dates - and the date-palm contributes a wide range of products to the economy. In addition to many different varieties of date, Landsberger (1967) lists from ancient sources the use of hearts of palm as a delicacy, and of the treacle-like sap as a sweetener; palm fibre was used for rope, fuel, pot-scrubbers, nets and sacks, and the fronds for fuel, baskets, mats, roofing, fencing and - the midribs only - for furniture. It is still common in Baghdad today to see palm fronds in use as whitewash brushes. The marsh area, dependent on readily available natural resources rather than being at the mercy of its canals as was the northern plain, has tended to remain relatively free from outside influence, but life there is by no means idyllic; the climate is stiflingly hot in summer and bitterly cold in winter and the conditions favour, in addition to the vicious insect population, the free spread of diseases.

In the northern part of the alluvial plain marshland occurs only in patches, although it may have been more extensive in ancient times (fig. 3). The fine alluvial soils and the water of the two rivers form the area's only really plentiful raw materials, for even in ancient times timber would have grown only in small stands along the river banks,

and any stone larger than a pebble has to be imported. From earliest times tauf (terre pisé), mud brick or baked brick has been the medium for building, with stone used only for details such as door sockets or, very occasionally, in monumental architecture (as for example at Ur in the Royal Tombs, where limestone was brought 50 kilometres from the desert to the west - Woolley, 1934). The landscape of the alluvium is one of interminable flatness which would originally have been relieved by the levees of the rivers, but otherwise only by more plentiful vegetation cover. It is now broken up by the remains of human activity, and even areas which are no longer cultivated are marked by abandoned canals and tells which have been left stranded by the changing courses of the rivers (fig. 4).

Above the Hit - Samarra line the deeply-incised river valleys make irrigation of the surrounding plain difficult (fig. 5). The low, undulating plateau known as the Jezirah, lying between the upper Tigris and Euphrates and the Turkish mountains, is therefore sparsely populated, mainly by pastoralists with some settled farmers in the northern part where rainfall is more plentiful. Within the Jezirah lie a number of small closed basins with no natural drainage outlet, the largest of which is the Wadi Tharthar. To the north-west of the Wadi Tharthar is the Jebel Sinjar, an extension of Syrian fold structures, which rises in places to 1000 metres and attracts on its upper slopes sufficient rainfall to permit settled cultivation.

On the east bank of the Tigris lies the rolling landscape of ancient Assyria, rising in steps towards the Zagros. The first such step is formed by the ridge of the Jebel Hamrin, through which the Diyala breaks into the open plain to the south-west. To the north-east of the Jebel Hamrin the country becomes increasingly broken and mountainous, a patchwork of small fertile valleys and hilly steppe, reaching towards the better-watered foothills and finally the mountains themselves. Dry-farming is possible in the more fertile soil of the valleys, while sheep and goats can be grazed on the uplands and have indeed destroyed most of the original forest vegetation of the hills. Houses in this area are built on the hill slopes, either of stone throughout or on stone foundations (fig. 6).

To the south and west the habitable plain of Mesopotamia is bordered by desert. Most of the desert region of Mesopotamia is not true desert; there are few areas of any extent where plant cover is either lacking completely or so scanty that it cannot supply some grazing, albeit sparse, all year round, and it is therefore classifiable as sub-desert (Guest, 1966, 69). Guest also concludes that the distinction between northern steppe and southern desert, sometimes drawn on the basis of latitude and altitude alone, is an arbitrary one; they should be distinguished mainly by the degree of plant coverage which they can support. The limit of atmospheric moisture which is critical to plant life is relative, and in Mesopotamia, where the benefit of rainfall is often lost to plant life because it falls in the winter, the open plant

communities characteristic of desert vegetation are to be found even in areas which receive more than 150 mm. of rain annually. To the extreme south and west of Mesopotamia bordering on Arabia the terrain becomes bleaker; the surface is rocky with areas of sand and outcrops of more resistant rock, intersected by wadis which drain off winter rainfall. On the desert fringes of Mesopotamia, however, most areas can support a sizeable population of nomadic pastoralists who can raise catch-crops of grain in the wadi bottoms in wet years. It is chiefly the lack of perennial wells which limits the exploitation of the grazing afforded by these areas. In periods of drought the nomads have always tended to gravitate towards the river valleys, a tendency which has often proved disruptive to settled life there. The position of wells, too, determined the routes by which traders, travellers and, on occasion, conquerors, could cross the great Arabian and Syrian deserts.

The economic possibilities of these geographical regions for man depend heavily on climate. The climate of the Mesopotamian basin as a whole has been described as continental (Oates, 1968, 3) or sub-tropical (Ionides, 1937, 24). It is a climate of great contrasts, between summer and winter, north and south, day and night. In southern Mesopotamia the maximum recorded temperature is 51^{o}C, the minimum -8^{o}C, and the diurnal range is often more than 15 - 20^{o}C. On the whole the area is arid, for the rainfall is nowhere heavy and over most of the alluvial plain does not much exceed 150 mm. annually. The rainfall is very variable, both from year to year and in distribution within any given season.

In southern Mesopotamia there are two well-marked seasons with short transitional periods. The short cool winter lasts from December to February, extending into March and April in the north; in the south these months constitute a short spring before the long, hot, rainless summer from May to October (June to September in the north). It is very unusual for any rain to fall in June, July or August, even in the mountains. January is the coldest month in all parts of the country with mean daily minimum and maximum temperatures in the plains ranging from 2 - 15°C. The hottest months are July and August during which the mean minimum and maximum temperatures range from 24 - 43°C. Only the dryness of the atmosphere makes the summer temperatures tolerable, although humidity may be high near water courses.

During much of the year the prevailing wind is from the north-west, and while it may mitigate the heat of high summer it may also bring with it stifling clouds of hot red or yellow dust which try the temper of human beings and wither growing plants. Dust-storms occur in most months of the year but are worst in June, July and August. In the winter months eastward-moving depressions from the Mediterranean can induce unsettled weather including strong south-easterly winds which bring rain from the Gulf and marsh areas to the southern plain. Most of the moisture from the Mediterranean falls on Anatolia and the Levant, but enough passes through the gap between the Taurus and Lebanon Mountains to ensure that the north and east of the Mesopotamian basin receive sufficient rainfall to support dry farming, from about 300 mm. to 500 mm.

or more in the foothills.

Evidence for the ancient climate of the Mesopotamian plains is limited. The pollen records from Lakes Mirabad and Zeribar, both in the high Zagros and thus outside Mesopotamia proper, have now been fully published (Van Zeist and Bottema, 1977). The cores from the two lakes reflect similar climatic developments. The period from c. 40,000 - 22,000 B.P. seems to have been dry, with open vegetation and scattered tree stands. At the height of the last glaciation, about 22,000 - 14,000 B.P., trees seem to have disappeared completely from the greater part of the Zagros Mountains, a disappearance attributable to much colder and drier climatic conditions than those which prevail today. After 14,000 B.P. pistachio re-appeared in the Lake Zeribar area and trees (pistachio, oak and maple) began to expand slowly throughout the area from about 10,500 B.P., producing a forest - steppe vegetation. The herbaceous vegetation differed markedly from that of the period of maximum glaciation, but the slow expansion of the forests was probably due to fairly dry climatic conditions. The present-day natural oak forest cover in the Zagros did not become fully established until around 5500 B.P.

It is difficult to know to what extent these records reflect essentially local conditions or to what extent the changes they reflect affected other areas. Most pollen diagrams from the East Mediterranean area suggest a climate in early Postglacial times which was drier than today's.

What is not yet entirely clear is whether this dryness was the result of generally lower annual precipitation or whether it took the form of drier summers, with higher temperatures or a longer rainless period. Higher summer temperatures would not have affected the potentially cultivable cereals and legumes, which complete their vegetational cycle before it becomes really hot, but a shortening of the present rainy season would be detrimental to them. Evidence from Saudi Arabia supports theories of a relatively wet phase from 5500 - 3500 B.C., but there is no indication that the climate of Mesopotamia has changed very substantially since the last Ice Age. It was, and is, an essentially arid region with bands of higher rainfall following the line of the Zagros Mountains. Within such an area minor shifts in rainfall or temperature can have a profound effect on marginal lands.

At present, rain-fed agriculture is possible only in the northern plain and the Zagros foothills. The rain-fed cultivation of cereal crops requires a minimum of 200 mm. of rain annually and it has previously been emphasised that the area where rain-fed agriculture is possible is not necessarily defined by the 200 mm. isohyet, which represents only the average annual rainfall (Oates and Oates, 1976a, 111). Man cannot live by a good statistical chance of bread alone. 200 mm. of dependable annual rainfall are necessary, and for practical purposes this coincides with the 300 mm. average rainfall isohyet. Because of the instability of the Mesopotamian rainfall pattern, with great variation between years and in distribution within seasons, extensive marginal areas

exist outside this zone of reliable rain-fed agriculture. These areas may return a high yield in a wet year and fail completely the next, and their cultivation involves varying degrees of risk which require the backing of assured capital. Some early sites have been surveyed in areas which are now marginal, suggesting either that such capital was available to them and hence that they were part of a more elaborate economy than is usually supposed, or that the distribution of rainfall has shifted slightly from time to time. There is evidence from some excavated sites now in marginal areas such as Umm Dabaghiyah (Helbaek, 1972), that local conditions were wetter than at present.

If the quantity of rainfall is important, so too is its timing, even in areas where irrigation agriculture is practised. Since practically no rain falls in any part of the country during the summer from June to September summer crops everywhere depend on irrigation. If the autumn rains are late, planting of winter crops in dry-farming areas may have to be delayed, with the concomitant risk of exposing crops to high temperatures, diseases and dust-storms later in the growing season. It is vital for crops to receive sufficient moisture during germination and growth, but too much rain is, if anything, worse than too little; besides damaging the growing plants it may contribute to soil erosion. Temperature is also crucial, for if it falls below $10^{o}C$ plant growth is interrupted, and as the mean annual temperature for the southern plain in January is only 10 - $12^{o}C$, the benefit of winter rainfall is often lost. Equally,

the fierce sunshine and hot drying winds of summer are a threat to summer crops. Today these are often protected by shelterbelts of sunflowers, while the groves of date palms beside the Tigris above Baghdad exist mainly to provide shade for lucrative citrus orchards.

If the climate of the lower Mesopotamian plain sounds inhospitable - and it is said to be one of the most physiologically trying in the world - the behaviour of the rivers also is unaccommodating for agricultural purposes. At the time when water is needed for winter sowing, they are too low; they then threaten the harvest with floods, only to decline once again as water is needed for the summer crops. The techniques of irrigating winter crops with a spring flood regime are complex, requiring careful planning to provide water when needed and protect ripening crops from flooding; one can scarcely envisage a sudden irruption of northern agriculturalists into the southern plains being able to cope with these new and difficult conditions. The river levees and higher basins of the delta and the tidal estuary (where tidal action would ensure natural irrigation and drainage) would have provided particularly favourable conditions for early irrigation agriculture, and Adams found that early sites in the Diyala region tended to be distributed along natural watercourses (Adams, 1965, 35). It has now been shown that the Samarran sites were founded on irrigation agriculture (Helbaek, 1964; 1972), and the fact that they are larger than earlier settlements and present a highly-organised appearance cannot be coincidental. Even the

simplest forms of irrigation would have required forethought, effort and some degree of co-operation. By the 'Ubaid period the size and number of settlements, and the presence of emmer at Ur (Helbaek, 1960), indicate a thriving irrigation agriculture and an increasingly complex society.

Mesopotamia today, and particularly the southern alluvium, presents a rather desolate appearance to the European eye, especially in the summer months. Some areas have been encroached upon by dunes (for example the region around Nippur), while elsewhere areas of dark-brown soil reveal heavy concentrations of salt. Such vegetation as there is tends to be sparse and monotonous, consisting notably of the two thorns, shoq and agul, although the landscape can change drastically with the appearance of spring growth (contrast figs. 4 and 5). The area is of course not deserted, and clusters of palms and other trees reveal the presence of houses or villages surrounded by their cultivated fields, while there is practically no part of the plain that is not grazed by sheep at some time of the year. It is, however, an area where the presence of man has had profound effects; little of its original natural vegetation remains. Even as one moves northwards to areas where higher rainfall and a shorter dry season permit a more flourishing and varied vegetation and the effects of soil salinisation have been less drastic one sees the consequences of human presence in the destruction of forests and consequent soil erosion. Not all the impoverishment of Mesopotamia can be blamed on Hulagu Khan.

There is evidence that the ancient environment was less hostile. Trees grew along the river banks, probably tamarisk and poplar in association with flowering shrubs, while the flood plain supported a summer vegetation of brush and grasses, with more luxuriant vegetation in the spring after a wet winter (Buringh, 1957, 38; Oates and Oates, 1976a, 115). With the swamp and marsh areas, these habitats would have supported a varied range of animal life and especially in the south there would have been ample resources for hunting/gathering cultures. Heavy silt deposits impede the recovery of such slight traces as would remain of these early horizons. Of the large mammals which once occupied Mesopotamia, only the wild boar flourishes, protected by the dietary laws of Islam. Most of the larger species are now extinct, fire-arms and motor cars having ended a process which began long before the lion hunts of the Assyrian kings or even the hunting of onagers at Umm Dabaghiyah.

Little natural tree-cover remains today even in northern Mesopotamia. Even the cultivation of poplars for roof-beams along the banks of the irrigation canals, providing simultaneously timber, shelterbelt and strengthening for the canal bank, seems to be becoming less widespread as baked bricks and steel beams come into use. The process of deforestation follows the same pattern all over the world; the regrowth of the trees cut down for timber or fuel is prevented by the grazing of animals, in the Near East chiefly sheep and goats. The destruction of forests in hilly regions induces soil erosion, while in more arid areas the use of woody plants

for charcoal, roots and all, also removes an important factor in the stabilisation of the soil. Yet another side-effect is the loss of dewfall which can make a small but significant difference to plant life.

The most serious consequence of man's activities in southern Mesopotamia, however, and one which has caused considerable damage over a very long period, is the process of soil salinisation. The light alluvial soils are potentially very fertile, being rich in lime and potash and adequately supplied with phosphates, though low in nitrogen (Guest, 1966, 11). They have, however, a low permeability to water and the arid climate, with evaporation losses exceeding annual rainfall by 20 - 40 times, tends to produce dangerous accumulations of salt in the soil, harmful to both plants and soil texture. Unless washed down into the water table, the salts are adsorbed by clay particles with the effect of destroying the structure of the soil, reducing it to a greasy texture which is almost completely impermeable to water and thus making it still more difficult to provide the necessary drainage. Salts accumulate in the water table which in this flat region has little lateral movement to carry them away, and the ground water everywhere is extremely saline. When the level is raised by over-irrigation, rains or floods, salts are brought into the root zone or to the surface by capillary action in wet soils. High salt concentrations will hinder germination and impede the absorption of water and nutrients by plants.

The ancient control of soil fertility depended on the

avoidance of over-irrigation and the practice of letting the land lie fallow in alternate years, so that deep-rooted weeds (which also provided pasturage) could lower the water table. In extreme cases, plots had to be abandoned for some time; under uncontrolled conditions, the river floods would not only have helped to wash salts out but would have deposited their non-saline silt on the affected areas.

According to Jacobsen and Adams (1958) there have been three major occurrences of salinity. The earliest affected southern Mesopotamia from 2400 - 1700 B.C., followed by a second and minor phase in central Mesopotamia from 1300 - 900 B.C., and a third phase in the Nahrawan area east of Baghdad only after 1200 A.D. The authors believe that increasing soil salinisation played an important part in the break-up of Sumerian civilisation and the movement of the centres of power to the north. A number of field records from Girsu around 2400 B.C., when cultivation had already shifted from wheat to the more salt-tolerant barley, give an average yield of 2537 litres per hectare, a respectable figure by modern U.S. or Canadian standards (but low by British ones) while by c. 1700 B.C. yields at nearby Larsa had declined to 1400 litres per hectare. There must, however, have been periods when improved agricultural techniques enabled at least a partial recovery to take place; in the time of Herodotus Babylonia was still an outstanding area of grain production.

Another, though perhaps less serious, problem attendant

upon large-scale irrigation is the build-up of silt. Irrigation canals, left unattended, will become clogged with silt; the head, which because of the low gradient must be considerably upstream of the outlet, will silt up first. A well-designed and constructed canal, however, should not allow vast quantities of silt to accumulate and modern farmers spend only two or three days a year on cleaning their canals. When the banks of spoil on either side become too high, a new canal is dug parallel and evidence of this practice can be seen all over Mesopotamia. On the small scale on which the earliest canals seem to have been constructed, relatively little labour would be needed for building and maintenance, and the hypothesis that the central organisation of the city state arose from the need to co-ordinate such activities seems untenable; there would, however, have had to be some control of the allocation of water to individuals. The major canals are a later development and although their construction and upkeep would have required the direction of a central authority, they were probably built in stages and, once built, could become in effect branches of the rivers themselves, almost self-maintaining.

The present government of Iraq has undertaken a massive programme of engineering works designed to restore the Mesopotamian plains to their original fertility. In the south the effects of soil salinisation are being countered by a great network of deep drains, and areas are being brought under cultivation once again through carefully designed irrigation schemes and the chemical restoration of soil

texture, while in the north the construction of dams and weirs is to provide both power for the towns and water for irrigation. One may hope that through these measures Mesopotamia will once again become one of the great grain-producing areas of the world.

2. Resources and Raw Materials.

In a country like Mesopotamia, where timber and stone are in short supply, it is necessary for the inhabitants to find alternative building materials. Over most of the country throughout its architectural history the alternative has taken the form of mud, processed in a variety of ways. Baked brick was, until recently, employed only occasionally in private houses because the high cost of fuel made it expensive to produce, and its use was usually confined to areas requiring protection against damp, such as courtyards, lavatories and 'bathrooms' (probably water storage rooms), or against excessive wear, such as thresholds and entrance halls; it was also used for door-sockets. The Larsa period houses at Ur are exceptional in the extensive use of baked brick walling, probably as a measure against rising damp (Woolley and Mallowan, 1976; see Chapter 6). Moisture is a great destroyer of mud brick and rising damp is particularly destructive in the south of Iraq, where the groundwater is extremely saline. Having been drawn up into the wall by capillary action, the salts re-crystallise upon drying, causing the bricks to crumble. The oldest and simplest technique of building in mud is however that known in Arabic as tauf, in French terre pisé, in which walls are built up, a course at a time, with strips or lumps of fairly plastic mud. The use of tauf in modern vernacular architecture tends to be confined to animal shelters and compound walls, but it was widely used for housing in the early prehistoric periods, from the first permanent structures at Jarmo until the appear-

ance of the first mould-made mud bricks at the Samarran sites of Choga Mami and Tell es-Sawwan and beyond. Because it is unbonded, tauf tends to be unstable; its load-bearing capacity is not as great as that of mud brick and buttressing is necessary. Both tauf and mud brick are improved by the addition of chopped vegetable material or sand, which strengthens the fabric and reduces the likelihood of cracking as the mud dries; this is equally true of mud mortar and mud plaster. The ideal time for brick-making is thus during the summer after the harvest has been brought in and threshed, when chaff and straw become available and the bricks can be left to dry in the sun. New building and repairs tend to take place towards the end of the summer, when provident householders resurface their roofs and replace fallen patches of plaster in advance of the autumn rainstorms.

Towards the Marshes in the extreme south of Mesopotamia increasingly extensive use is made of reeds as a building material, and in the distinctive arched houses of the Marshes themselves virtually no other material is used (fig. 2). Impressions of reeds or reed bundles on mud plaster from sites in the south such as Eridu (Safar, 1950, 30), Tell al-'Ubaid (Hall and Woolley, 1927, 57) and Ur (Woolley, 1955, 10) indicate that, as one might expect, early inhabitants of the area were exploiting all the available resources. In mud brick buildings a layer of reeds was sometimes placed between the old walls which formed the foundations and the new walls of the superstructure, or simply between courses of a new wall, to improve the grip, for example at Ur

(Woolley and Mallowan, 1976, 21), or Tell Asmar (Delougaz, Hill and Lloyd, 1967, 151). Reeds and reed matting were used as flooring materials in all periods from Jarmo to the present day, and the reed matting found on a Level II floor at Choga Mami was of a weave which is still made (Oates, 1969, 116). Light doors of vertical reed panelling were found at Tell es-Sawwan (Al-A'dami, 1968, 59) and in two of the chapels in the Larsa period AH house quarter at Ur (Woolley and Mallowan, 1976, 22). In modern roof construction a layer of reeds or (preferably) reed matting is laid over the rafters and cross-ties to provide a support for the brushwood or other plant material which is finally sealed by several layers of mud plaster, and the remains of ancient houses indicate that construction methods have not varied greatly with time; houses at Umm Dabaghiyah (Kirkbride, 1973b, 208), Tell Mefesh in Syria (Mallowan, 1946, 111) and Khafajah (Delougaz, 1940, 49), produced evidence of similarly-constructed flat roofs. Representations on seals seem to show reed buildings, many of them arched, in use as animal shelters, and compounds in southern Iraq today often contain reed animal shelters alongside mud brick living-rooms (Heinrich, 1957).

The purchase of roofing timber constitutes a major expense in building a mud brick house, and until recently sound timbers were never abandoned. Palm-trunks are not ideal for roof timbers because their fibrous structure has poor load-bearing qualities. In the absence of any substitute, however, a split palm log will provide an adequate rafter, and palm charcoal has been found, though in smaller quantities

than poplar, at Ur and Nuzi (Woolley and Mallowan, 1976, 21; Starr, 1939, 494); the roof of the Tell Mefesh house cited above included poplar beams. Poplar is the timber most favoured by modern builders; as already noted, the practice of lining watercourses with poplars to provide good, straight structural timbers and consolidate the canal banks is dying out, but it may still be observed on the road from Baghdad to Ctesiphon. In northern Mesopotamia oak was used; there are a few examples at Nuzi and it contributed 45/50 specimens of charcoal at Jarmo (Braidwood and Howe, 1966). Tamarisk, also found at Jarmo, was the only wood of which there was any trace at Arpachiyah (Hubbard in Hijara et al., 1980, 153).

Gypsum (Arabic juss) is used in northern Mesopotamia and Syria where it is found over large areas as a surface or subsurface deposit, but it seems never to have been exported in any quantity to the south of the country. When calcined, the fine white powder can be mixed with water to form a hard plaster used for walls, floors and various domestic installations; this is the substance known to us as plaster-of-Paris. It is not much used in modern villages on external surfaces, and personal experience attests that a damp juss floor can be almost lethally slippery, but in ancient houses it was often used in contexts where a greater degree of water-proofing than would be afforded by mud plaster was necessary. At Umm Dabaghiyah, where walls, floors and ceilings were coated with gypsum plaster and it was used to form a variety of household fittings such as wall-niches

and chimney-hoods, the gypsum kilns of Level II were found, situated on the east of the settlement so that the prevailing wind could blow away the fumes (Kirkbride, 1973b, 208). Gypsum plaster was used on walls and floors at many other prehistoric sites and was occasionally and rather surprisingly used to surface the open passages between houses, for example at Yarim Tepe I (Merpert and Munchaev, 1973a, 96) or Choga Mami (Oates, 1969, 116). It certainly continued in use into historical periods, notably at Tell Chuera, where it was used to form curious basins and channels as well as for flooring (Moortgat, 1960b, 3), and at Tell Asmar in Stratum Va, where a courtyard and entrance vestibule were gypsum-plastered (Delougaz, Hill and Lloyd, 1967, 169). In later periods it seems to have been little used, except occasionally as whitewash, possibly because it was supplanted in popularity by bitumen.

Bitumen is a naturally-occurring substance related to petroleum, and in ancient Mesopotamia most bitumen was probably obtained from seepages in the regions of Hit and Kirkuk (Forbes, 1955, 32), particularly the former. The raw material appears to have been collected in lumps from the river, pressed to expel excess water, and packed in baskets for transportation; it is found in this form in 'Ubaid levels at Ur (Woolley, 1955, 8). In the north it was in use even earlier; grain bins in the early levels at Hassuna were lined with gypsum or bitumen plaster (Lloyd and Safar, 1945, 262) and it was used for lining pits at Matarrah (Braidwood et al., 1952, 7). As its water-proofing qualities became

appreciated, it was employed with increasing frequency in rooms where water was stored or used, for example the lavatory of House 32 in Stratum IVa at Tell Asmar (Delougaz, Hill and Lloyd, 1967, 176), although in the Larsa period houses at Ur its place seems to have been taken by baked brick. At Nuzi, near the Kirkuk sources of bitumen, it is applied as plaster over baked brick floors and walls in bathrooms, water-filter rooms and on outside walls; traces in some hearths suggest that it was burned as fuel (Starr, 1939, 44). It should be pointed out that in most of these contexts the material being used is not, strictly speaking, bitumen, since pure bitumen is sufficiently plastic to flow in the heat of the sun and is, moreover, extremely adhesive. In order to stiffen it fillers such as sand or loam and fibrous materials such as straw or reeds had to be added, producing a substance which is more properly known as bituminous mastic (Forbes, 1955, 56 - 64).

With the exception of door-sockets, stone is not used in house-building in the southern alluvium; in northern Mesopotamia, there are stone foundations at many sites including Jarmo, Shemshara, Arpachiyah, Tepe Gawra and Tell Taya, although in each case the stone formed the footing for a superstructure of tauf or mud brick. One would expect northern houses to have differed from those of the south in roof construction; in the higher rainfall areas, roofs would probably have been gabled or overhanging instead of flat and flush with the walls.

Apart from built-in fittings such as ovens, hearths, benches and niches, or domestic equipment in stone or baked clay, there is little evidence of furnishings. In House D at Khàfajah Delougaz found an oddly-shaped clay object which he suggested might have been the leg of a low table, although one is left wondering what became of the other three (1940, 52). We know that reed matting was used on floors, and a variety of baskets of different species of reeds and rushes no doubt provided storage in addition to those of palm fibre mentioned by Landsberger in the study already cited. Postgate (1978) describes modern applications of these products, which unfortunately do not survive well. Salonen (1963) has written a survey of Mesopotamian furniture from textual and representational evidence; the less detailed account by Baker (1966) provides more accessible illustrations. Salonen divides furniture into four functional groups: seating, sleeping, storage and tables. In the absence of direct evidence, it is difficult to know how much furniture the ordinary private house would have contained, but since suitable timber would have had to be imported it seems reasonable to assume that most households would have been limited to the sort of furniture, such as stools and chairs, which could be made from locally-available materials like matting and the mid-ribs of palm leaves, plus the occasional bed and storage chest. Certainly most modern village houses contain little more than this (see Chapter 2), partly because both climate and insect life are destructive of expensive wooden furniture, partly because space is too limited to be occupied by large, relatively immoveable objects which are only in use for part

of the day. Rugs, cushions, mattresses and blankets, many of them entirely home-made, provide flexible bedding and seating arrangements and can be cheaply and easily replaced, and this was probably the case in ancient houses also. It is unlikely that soft furnishings of this sort would have left any trace either physically or in the texts, since the women of each household probably produced their own; loom-weights and spindle-whorls are among the most frequently mentioned objects in houses of all periods.

No great range of construction techniques is possible given the limited range of materials available to ancient Mesopotamian builders. The arch was known from Umm Dabaghiyah onwards, and the Halaf period tholoi show that the principles of the dome were understood. Occasionally, buttressing and relief are used in private houses but the regular stepped buttresses of monumental buildings are not applied to domestic architecture, although there may well have been decorative elements, such as moulding or paint round doorways or ornamental balustrades surrounding the roofs, which are lost to us but originally differentiated houses of apparently similar plan. One feature of Mesopotamian town planning which remains remarkably consistent from the period of the Samarra culture onwards is the orientation of buildings with their corners to the cardinal points. The orientation of modern towns and villages tends to be guided by the direction of the prevailing wind and varies from area to area, but the extent and persistence of the ancient pattern of orientation suggests that it reflects some wide-spread religious or magical belief.

CHAPTER 2

ETHNOARCHAEOLOGY AND DEMOGRAPHY

Introduction

The use of analogies drawn from existing primitive societies in interpreting the remains of the past has a long and venerable history. Early contacts with American Indians stimulated the imaginative attempts of 17th century British antiquarians to reconstruct the dress and way of life of the Ancient Britons (Orme, 1981) and European prehistorians have continued to use parallels drawn from ethnography and folk history. The systematic use of ethnographic analogy as a methodological tool, however, has been most fully explored in America as one of the techniques of the New Archaeology. It is not necessary to recount here the full history of the development of the New Archaeology and the long rearguard action fought against it by its mainly European opponents; a useful summary has been written by Trigger (1978). Briefly, it has grown out of the close relationship between anthropology and archaeology in America, where there is extensive continuity between the Indian cultures of the past who formed the archaeological record and those of the present (or recent past) who form the province of the anthropologist. Archaeology in America is therefore regarded as a social science, whereas in Europe it developed as an extension of historical investigation into the pre-classical past, placing itself in the Humanities.

American archaeologists argued that, like any other scientists,

they should proceed by systematically testing hypotheses in search of universal laws governing regularities in human behaviour. As a social science, archaeology should aim to explain 'the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man's existence' (Binford, 1972, 21; a collection of earlier essays reprinted). In order to obtain a body of accurate and quantifiable data, the New Archaeologists evolved increasingly sophisticated statistical techniques for sampling and processing archaeological material, and the 'historical approach' of European archaeologists was condemned as being merely descriptive.

As Trigger has pointed out, this search for regularities inevitably means that, 'In comparative investigations in anthropology, only common factors tend to be regarded as worthy of explanation; differences are treated as accidents that are of little importance' (1976, 6). Gould makes the further point that this approach implies that archaeology should confine itself to those aspects of human behaviour which are subject to measurement and scientific analysis, despite the fact that 'we have absolutely no assurance that those aspects of human behaviour that we can validate scientifically are really important or worth knowing' (1980, 36 - 41). Like Trigger and Young (1977, 387), Gould suggests that the anomalies between contemporary and prehistoric patterns may prove more rewarding than the similarities. The dismissal by the New Archaeologists of the historical approach arises from their fundamental misunderstanding of

the nature of history. History does not merely describe, it attempts to explain unique events and differences in all their complexity, but nevertheless in terms of the conjunction of general processes, and the twentieth century has seen the growth of the social science-based sub-disciplines of social and economic history. No reputable historian would, as Binford suggests (1972, 22; 114) 'explain' cultural change in terms simply of migration or invasion (as the vast literature on, for example, the Viking expansion proves), but it may be argued that in studying the past it is often as necessary and as difficult to establish what happened as to explain why it happened. There is no reason why the historical and social science approaches to archaeology should not co-exist, their aims and methods complementary rather than irreconcileably opposed.

The social scientists of the New Archaeology owe a considerable (if often unacknowledged) debt to the Structuralist theory (most elegantly expressed by the French anthropologist Lévi-Strauss) which in its simplest form states that the relationships between elements of a society are signs of the structure of that society. Thus, according to Binford, '.... we cannot excavate a kinship terminology or a philosophy, but we can and do excavate the material items which functioned together with these more behavioral elements within the appropriate cultural subsystems. The formal structure of artifact assemblages together with the between element contextual relationships should and do present a systematic and understandable picture of <u>the total extinct</u> cultural

system' (1972, 23).

It was to facilitate the attempt to reconstruct the relationships between the material remains of a culture and the behaviour patterns that produced them that the techniques of Ethnoarchaeology were evolved. As we have already seen, the use of ethnographic parallels in archaeological reasoning has a long history. As advocated by Binford and the New Archaeologists, however, the use of ethnography in archaeology is rather more complex. In the first place, to argue by analogy is not to argue by example, for an analogy involves a similarity of relations. Thus observations from ethnographic sources are not to be used directly for the interpretation of archaeological data, but rather should be used as the basis for hypotheses regarding the relationship between the excavated remains and the behaviour which formed them, hypotheses which can then be tested against further archaeological evidence. In other words, the fact that an isolated complex of physical remains has been observed to result from certain behaviour patterns in the present does not automatically imply that a similar complex in the past was the result of similar behaviour. In his article on 'Smudge Pits and Hide Smoking' Binford suggests two important conditions for successful argument by anaolgy; firstly, 'If the initial resemblances are such that the inferred property would account for the resemblances, then the conclusion is more likely to be true,'and secondly, 'The more comprehensive the positive

analogy and the less comprehensive the inferred properties, the more likely the conclusion is to be true' (1972, 33 - 34).

As a number of writers have remarked, there are two broad categories of analogy within this field. One is the 'direct historical' or continuous approach, applicable in those areas of the world where there is known continuity between the present and the archaeological past. 'Ethno-history' has been used most successfully in America, New Zealand and Australia (Orme, 1981, 22; Gould, 1980, 250); it is paralleled in Europe by the 'Folk-culture' approach. According to one author, 'This type of analogy is generally considered to provide the highest probability of being correct because the conditions of time, space and cultural affinity of the groups who produced the two sets of compared data are analogous' (Stiles, 1977, 95).

The second category is the discontinuous or 'new' analogy (Ascher, 1961, 317), Orme's 'Ethnoarchaeology'. In this approach the analogy can be drawn, in theory, from any pre-industrial culture, although there is general agreement that the probability that archaeological and ethnographically observed activities were analogous is likely to be greater if the two cultures were manipulating similar environments in similar ways, or in other words, 'If archaeologists and ethnographers are to work with common problems .... they must work in terms of comparable sociocultural units'

(Binford, 1972, 63). An alternative attitude is exemplified by Ucko, who has maintained that analogies may be drawn from any source, and the more the better, provided that the hypotheses formulated from them are rigorously tested against the archaeological evidence (1969, 262). The drawback to this approach is that often arguments from analogy are adduced in precisely those cases where the archaeological evidence is unlikely to prove conclusive one way or another, and there is a danger that the use of analogy will obscure the recognition of prehistoric adaptations for which no ethnographic counterparts exist.

It has often been observed that ethnographers rarely record the details of material culture that would be of interest to an archaeologist, and archaeologists have been urged to conduct ethnographic investigations on their own account (Ascher, 1961, 323; Stiles, 1977, 87). Within Mesopotamia, there have been studies of the mountain-dwelling Kurds (e.g. Barth, 1953; Hansen, 1961) and of the marsh-dwellers of the south (e.g. Salim, 1962); those authors who have written about the Arabic-speaking agriculturalists of the lowlands were not primarily interested in housing or other aspects of material culture (Fernea, 1965; 1970). A number of studies of town and village architecture in Iraq and Syria have been published, but these have been essentially descriptive works, mainly concerned with idealised plans and with details of decoration and construction (e.g. Sinjab, 1965; Reuther, 1910; Langenegger, 1911; Wirth,

1955, etc.) rather than with the social context of the houses and their development through time. Recently there has been a growth of interest among architects and planners in vernacular forms, and a number of articles on the fast-disappearing traditional town-houses of Baghdad have been published (e.g. Krunic, 1962; Al-Azzawi, 1969). These houses inspired one of the best-known examples of the use of analogy in Near Eastern archaeology, Woolley's reconstruction of the Larsa period house quarter at Ur in terms of the architecture and traffic of contemporary Baghdad, a reconstruction that almost certainly owes more to Woolley's own experiences than to the excavated evidence (1976, 16 - 26; see Chapter 6). Modern conditions were also cited in arguments about the presence or absence of courtyards in the Diyala region (Delougaz, Hill and Lloyd, 1967, 148) and by Frankfort in his article on the populations of ancient cities (1950, 100 - 104). Until now, no ethnoarchaeological surveys have been conducted in lowland Mesopotamia, although two such studies have been carried out by American archaeologists on villages in the Zagros Mountains in Iran (Kramer, 1979; Watson, 1978 a and b).

The Survey.

It is clear from this brief summary of the literature that the existing ethnographical evidence is not always directly applicable to lowland Mesopotamia, while the architectural writings, though interesting, are of a general nature only. There seemed to be room for a survey of modern village architecture in Iraq. Unfortunately this was impracticable, and the area from the upper Khabur River to the Jaghjagha River north of the town of Hasake in northern Syria was selected for survey, partly because of its proximity to Iraq and partly because it was known to be an area with a considerable diversity of ethnic and religious groups (fig. 7). It was thought that it might be interesting to observe what differences, if any, existed among the settlements of the various groups.

South of Hasake, agriculture is dependent upon irrigation, but the rainfall rises towards the Turkish mountains and rain-fed agriculture is said to be reliable north of Chagar Bazar. No detailed figures on rainfall or temperature are available, but figures for Deir-ez-Zor (fig. 8) show a climate not unlike that of Baghdad, with mean monthly temperatures from 7°C in January to 33°C in July (Admiralty Handbook for Syria, 1943, 40; Fisher, 1950, 374), and one would expect it to become cooler as well as wetter towards the mountains. During the survey in August 1979 we regularly recorded noonday shade temperatures of over 40°C. The landscape away from the rivers is one of flat, treeless steppe,

with higher ridges of limestone and occasional outcrops of basalt, and there are numerous ancient mounds, most of which shelter modern villages.

By the time we had driven to the Khabur area from Baghdad we had just over two weeks to carry out the survey, insufficient time to attempt a full anthropological survey of even one village in the way Sweet did for Tell Toqaan (Sweet, 1960). In any case, the summer of 1979 was a time of considerable unrest, not only within Syria itself but between Syria and Iraq, and it was therefore decided to limit the aims of the survey to photographing and planning as much as possible, visiting as many houses and acquiring as much technical information as we could.

We started each morning just after sunrise, at about 5 a.m., and returned to Hasake some time after 12 a.m., since by 11 o'clock the light was so strong that taking photographs outside ceased to be worthwhile. Four roads led north from Hasake towards the Turkish border, and we explored the area along each of these in turn, as well as the road from Qamishliye to Darbassiya, noting the general architectural features of the area, and as far as was possible, the general distribution of villages within it. On subsequent days we would stop at randomly selected villages and ask for permission to take photographs and plans. Sometimes we were unable to do so because of the lack of a mutually comprehensible language; sometimes we were simply not welcome. We nevertheless managed to visit (though not necessarily to study

in detail) at least two villages in each area. This of course represents only a fraction of all the settlements and there must inevitably have been many groups and architectural variations missed - and many mistakes made.

The settled life which the many ancient mounds in this part of Syria indicate is said to have been disrupted by the Mongol invasions, and until quite recently tribes of sheep-keeping nomads formed the bulk of the population, with few villages away from the rivers. Since the First World War, however, a number of refugees have entered the area from Syria and Iraq, mainly Kurds, Assyrians and Armenians. The Armenians seem to have gravitated towards the towns, where they joined other religious minorities - in Hasake there were at least five different churches - but the Kurds and the Assyrians have certainly established villages from which they farm the surrounding countryside. Some of the nomadic groups have become semi-sedentary and have built villages which are periodically left empty for months or even years. In the eastern part of the region from Hasake to Qamishliye along the Jaghjagha are villages of Arabic-speaking Muslim peasants. Most of these villages, apart from those in the immediate vicinity of the Jaghjagha, have been founded since the last war (figs. 19 - 41).

The pattern of settlement in this area along the west side of the Jaghjagha was one of small villages of 4 - 20 houses, and it was not unusual to see houses standing alone. Many villages were built on the southern side of an ancient

mound which provided both shelter from the prevailing wind in winter and a suitable site for a cemetery. Houses were single-storied, of straw-tempered mud bricks measuring about .30 x .45 x .10 metre, with straw-tempered plaster inside and out. Living-room floors were of a similar plaster, but in animal shelters and storage rooms no finish was applied to the earth floors. Many villages had just finished their re-plastering and repairs for the year, but some refurbishing was still going on, and a good deal of new building was being undertaken (figs. 9 - 11). In the north of the area, near the Turkish border, there was a large brick-making operation using earth from the side of an old tell, which the foreman informed us was better for mud brick-making than ordinary earth because it was 'cleaner' (figs. 12 - 14). Most villages, however, took the earth for brick-making from shallow scoops between the houses. Some stone was used in the low foundation platforms on which living-rooms were sometimes built, or for cobbling in courtyards.

Many though by no means all of the houses in this area were built around a courtyard with a high or low wall. A particularly interesting feature of some was a large guest room with its outer walls divided into panels by shallow buttresses or pilasters. This sort of ornament was a feature of the Khabur region as a whole, and some very elaborate and pleasing effects were obtained, reminiscent of the reconstructions one has seen of ancient Mesopotamian temple facades. South of Hasake even more complex designs were obtained by combining the panels with ornamental brickwork (figs. 15

and 16). This type of wall decoration was always found with a flat roof finished off by a squared overhang carried on planks or beaten-out tins laid across the projecting ends of the roof beams, a finish also found on simpler rooms. Besides strengthening the wall and producing a pleasing visual effect, these ornamental facades had the effect of cooling the room by throwing part of the wall into shade and setting up cooling currents of air.

In the south of the area roofs were flat, with a low parapet and metal guttering (usually of beaten-out tins) to carry off the rain-water, and were usually constructed so as to slope gently away from the side containing the entrance. The method of roof construction does not vary much throughout the Near East; stout poplar beams are laid across the long walls with thinner boughs placed transversely across the beams (fig. 11). These are then covered, according to taste, wealth and the availability of materials, with reed matting, brushwood, straw, grass or reeds. If enough timber is available locally and the householder can afford it, the boughs and first layer of reeds or brushwood are replaced by a ceiling of planks laid across the beams; this looks well and reduces the insect population. In both cases the next stage is a thick layer of brushwood over which several layers of straw-tempered mud plaster are laid down and packed hard. Ideally, a roof should be replastered and rolled each year, but as with other repairs this depends to some extent on the availability of straw. In the northern part of the area, towards the Turkish border, the roofs were cambered (fig. 34);

this was achieved by placing a vast heap of golden straw on top of the first layer of plaster and then plastering over it. The ends of the poplar beams are usually left to project through the wall; 4 metres is the maximum width which can be spanned without support, and 3 - 3.5 metres is the usual width of a living-room. Access to roofs for sleeping and various household tasks is by high mud brick steps or wooden ladders.

Living-rooms had doors of wood or metal, usually purchased in the local market, and windows and doorways were outlined with whitewash. Living-room windows tended to be large, c. .50 metre^2, and heavily barred although not always glazed. Store- or animal-houses and some living-rooms had small unglazed windows c. .20 metre^2 set in rows just below the roof.

Most houses had bed platforms of mud brick, wood or metal measuring about 2 x 3 metres (fig. 18). Mud brick platforms incorporated earthenware jars or old ghee tins for coolness and all three types had screens of matting or poles for mosquito nets (also used to support clothes-lines). One example was seen of the summer hut of branches or matting which is common along the Euphrates to the west and in Iraq.

Fig. 19 shows the layout of one of the villages visited in this area, Kheshuga. Some of the houses are grouped together, sharing walls, while others stand alone. Wide

lanes and open areas between the houses were used for dumping rubbish and storing fuel and straw. There was no school or any other public building, and apparently only one well, but the village had the use of a combine harvester. The villagers estimated the population of the village at 100; only eight of the houses were currently occupied. The inhabitants were Arabic-speaking Muslims practising a mixed agriculture.

House 9 was the most recently built and unlike the others had only a low enclosure wall about 1 metre high surrounding its courtyard; the others had high walls, about 2 metres. It consisted of two living-rooms, one rectangular and one L-shaped, each opening directly onto the yard (fig. 28). This L-shaped plan occurred elsewhere in the area, although as in the commoner rectangular houses the rooms usually opened off either side of a small entrance hall or vestibule, so that the living-rooms shared one door to the yard. In other villages some houses had no enclosure wall, but the yard area in front of the house was treated as a part of the property and not used by through traffic. The enclosure walls are built when store- and animal-rooms are added to the basic living quarters. Courtyards were swept regularly and the resulting clean, hard surface would be distinguishable archaeologically from the dirty, pitted areas between houses. They might also be distinguishable by their contents, which in addition to bed platforms, washing lines, bread ovens and sheep pens included hen coops and storage bins of mud plaster, (figs. 26, 27, 31, 32), but many of these were also found

scattered about the spaces between houses. Some families kept pigeons in what can only be called 'pigeon-holes' built into the roof (fig. 31), and three of the houses at Kheshuga had gardens. It is interesting to note that although some of the young men of the village wore the traditional jelabiya, many had adopted European trousers and shirts. The women, on the other hand, retained their distinctive traditional dress, with all its various layers of trousers, under-dress, over-dress and head-dress, although using modern synthetic fabrics in bright floral patterns.

House 3 at Kheshuga (figs. 20 - 27) was built around a large, partly-cobbled courtyard and housed twelve people. Only three of the rooms were living-rooms, the others being used at present as stores for tools or grain, or as shelters for animals. The house had a particularly imposing guest room with a decorated facade standing on a low platform of stone and brick (figs. 21 - 22); the guest room proper was reached through a small vestibule where mats and cushions were stored and where guests could leave their shoes. The floor was covered with felt and striped woven mats for seating, and there were also a few stools. The whitewashed walls were decorated with brightly-coloured rugs of a type which can be bought in any Syrian market; they are made of some synthetic fibre, have a shallow pile like plush and represent a wide variety of subjects, from the Ka'aba at Mecca to the Last Supper via the Stag at Eve. The windows were low enough for someone seated on the floor to look through and there was a wall niche; such niches often provide the only form of

storage for small personal possessions and have the advantage of being proof against leaking roofs. The ceiling in this room was of boards; other rooms in the house had ceilings of reeds or grass.

The remaining living-room was used for storing bedding (pillows, mattresses and quilts), clothing and various cooking utensils, although there were signs that cooking was a moveable operation (fig. 23). This room had two small windows at one end and in the wall facing them at the other end of the room was a niche containing a water jar, which appeared to be a blocked-up doorway. This room and the grain store and vestibule next to it may well have formed the original core of the house, and from its panelled facade and plastered floor the grain store across the yard was probably a smaller precursor of the guest room (fig. 24). One of the advantages of mud brick architecture is its flexibility; as the numbers or fortunes of the family vary, new rooms can easily be built on or old doorways walled up.

In two of the other rooms, grain was stored in bins formed by low mud brick walls and other foodstuffs were stored in sacks (fig. 25). Most of one side of the courtyard was taken up by animal pens with a covered shelter at one end and a circular plaster bin for fodder halfway down (fig. 26). The mud brick bed platform stood against one side of the pen and was reached by a flight of steps (fig. 27). Figures 33 to 41 show another village in the area north of Kheshuga, Isif Tell, which had slightly different features including

cambered roofs.

Moving westwards away from the Jaghjagha the next area visited was inhabited mainly by Kurds. The landscape was less well-watered than that next to the rivers, but several villages were irrigating summer crops with the aid of pumps. The Kurds have a reputation for mechanical aptitude and their villages were distinguished by the numbers of dilapidated cars and trucks and the sound of transistor radios. In other ways, too, their settlements differ from those of the Arabic-speaking farmers along the Jaghjagha. There were fewer scattered houses and the villages tended to be larger, up to 30 houses. Once again villages were built facing south on the southern side of a tell, but instead of being sited on the lower slopes the Kurdish villages climbed right up to the highest point, which was often crowned with a large, elaborately-panelled guest house. Houses tended to be ranged in terraces across the slope with some free-standing houses at the foot of the tell (figs. 42 - 64).

Buildings were again of mud brick plastered, and stone was widely used to form level platforms for living-rooms. One two-storey building was seen, apparently a guest room above a row of shops. Roofs were flat and generally finished with the squared-off overhang. Fig. 42 shows the plan of a village called Kra'aysh. The village guest house is sited on the highest part of the tell with two houses slightly lower down to the west of it. The next three houses are arranged in a terrace across the slope to the south, leaving

a broad 'street' in which ovens (in roofed shelters), a well and bed platforms were situated and animals tethered. The remaining houses are more or less on the flat ground at the bottom of the slope and one of them, most unusually, faces north. The population of the nine houses of the village was estimated at 130 and it had a school. Several families shared a rabbit warren with wire-netted entrance.

The guest house was clearly an important part of village life for the men. It had a panelled facade and stood on a low platform of stone. The main room was juss-floored and whitewashed with a dado of blue paint c. 1 metre high running round the walls; it was heated by a stove and reached through a small vestibule where the handsome coffee-ladle and pots were stored and shoes left. As well as being used for entertaining guests and as a meeting-place, it was also a place for study and contemplation, and a copy of the Qur'an hung in a pouch on the wall.

In plan the houses of the village varied considerably but all had one feature in common: the living-rooms were not reached directly from the yard but opened off a hall or vestibule. Several houses were of the simple three-room plan, with a rectangular living-room opening off one side of the hall and a rectangular or L-shaped storeroom opening off the other (e.g. Houses 1, 4 and 9). Others had more complicated plans with rooms opening off one another. Only four houses had walled courtyards, and even they owned ovens and animal sheds elsewhere in the village. The courtyard or

area in front of the house fulfilled the usual range of functions, housing sheep, goats, cattle, turkeys, geese, hens, pigeons, dogs, donkeys and even a horse, and providing the site for ovens, washing lines, wells, drinking troughs, grain bins, small gardens and bed platforms (figs. 49, 52, 53, 58 - 60 and 62). One type of grain bin was built of mud brick and L-shaped in plan, the size of a small room but only one metre high (fig. 63). Living-room windows were large, glazed and barred, and opened onto the street as well as the courtyard. The windows of other rooms were small (c. .20 metre^2), unglazed and set in rows halfway up the wall. Fig. 61 shows an animal shed with such windows; it has a pitched roof of shorter, cheaper timbers. Doors and windows were sometimes outlined in white and House 7 had an intricate design over the door (fig. 57). External doors were usually double, of wood or metal; some houses also had internal doors. The floors in most houses had just been re-plastered and all but one of the living-rooms visited had board ceilings and were whitewashed; those used as guest rooms often had a dado of blue paint.

Each house had at least three rooms: a hall, which might have doors to both street and yard; a storeroom/kitchen, and a guest-room/living-room. Both the larger rooms were also used for sleeping in winter. Any additional rooms were invariably bedrooms, the rule apparently being that each married couple and their unmarried offspring should have at least one room. Since this room was intended not only for sleeping but for storing bedding, clothes and other possessions,

the bedrooms were generally amply provided with storage space in the form of wardrobes and wall niches, with and without shelves. Kitchen/storage rooms also had niches and shelves for storing bedding, kitchen utensils and food. All the houses visited boasted a wide and colourful range of possessions including the usual quilts, mattresses, pillows and blankets, aluminium cooking pots, woven striped mats, village-made felt mats in natural wool, old kelims, sewing machines, painted wooden and metal chests, wrought-iron cradles, stools, tables, wooden and metal beds, wooden dressers, glass-fronted display cabinets and even a television. The rooms were decorated with curtains, embroidered cloths, photographs, plush wall-hangings on the usual subjects, and a truly remarkable range of vases, glasses, cups, plates, artificial flowers and other objets d'art in materials from wood to plastic. Some houses were heated by stoves in winter; lighting was by means of pressure lamps hung on hooks from the ceiling and cooking was done on primuses.

Figs. 43 - 49 show House 3, with five rooms housing fourteen people. The entrance hall, with doors to both street and courtyard, was used by the women as a sitting- and work-room (fig. 45); on one side of the hall a corridor led to the room where food and bedding were stored (fig. 47) and to a bedroom with niches for storage (fig. 46). On the other side of the hall were two more bedrooms; the first, which was also used for receiving guests, had a partly raised floor to avoid the draughts created by traffic through it to the second bedroom, which contained a wardrobe as well as two

niches (fig. 48). The courtyard contained a well with drinking trough, oven, wooden bed platform and two animal shelters (fig. 49).

The Kurds of this village had family links with the district around Mosul, and some of the women's clothes had been bought there. As in the Arabic-speaking farming villages the women retained their distinctive dress with trousers gathered at the ankle (not loose like the Arab women's), long-sleeved overdresses and long quilted coats, all made whenever possible from gauzes and brocades with metal threads. The men on the other hand have abandoned Kurdish dress for European shirts and trousers in the case of the young men, and jelabiyas, kefiyas and ageyls worn with a European jacket for the older citizens.

Moving westwards the landscape began to look rather different. In the extreme north and south of the area there were villages of settled Arabic-speaking farmers, but in between the landscape was dry, red and dusty, with very sparse natural vegetation and little sign of cultivation. Villages were far and few and seldom of more than 10 houses, although each village had at least one large guest house with a decorative facade, sometimes painted inside and usually part of one of the larger houses. As in the first area, the villages were often sited on the southern side of a tell facing south and used the top of the tell as a graveyard. Some distance outside the village would be a well with a long drinking trough of juss (fig. 66). One or two of the

villages at which we stopped turned out to be completely deserted, and although doors were securely padlocked and windows blocked up in obvious expectation of return, it was clear from the state of repair that some had been empty for over a year. Even before we found a village with some remaining inhabitants, it was obvious that the occupants of this area pursued a different way of life from those of the first two areas.

Fig. 67 shows the village of Abu Hejira; of its nine houses only three were occupied, the occupants of the others having moved off with their sheep to find pasture nearer the rivers. The village was built on the southern side of the tell, the top of which was used as a cemetery, and the largest house with its impressive guest room was situated furthest up the slope. Unfortunately this house was empty and securely padlocked, but as can be seen from figs. 74 and 75 the guest room stood on a high platform of stone and mud brick which incorporated storerooms. The facade had a lower row of large wooden-framed windows and an upper row of small windows set in arched recesses, with single pilasters surmounted by moulded tuning fork-like shapes between the windows and double pilasters joined in the middle at each end and between the door and the first set of windows; a complicated but pleasing design. The roof of the guest room and the other living-room were of the squared-off overhang type, as were those of several other houses in the village; the rest had the usual flat roofs with a low parapet and rectangular metal guttering, although the guest house had

long circular drain-pipes.

Only two of the houses had fully enclosed courtyards although House 3 was enclosed on three sides. In construction and plan they were similar to those of the previous two areas, being of mud brick plastered and either rectangular or L-shaped in plan with a room on either side of an entrance hall (fig. 76). They differed slightly in detail, however; living-room windows were small and not always glazed, and front doors were always of wood. Such bed platforms as were seen were of mud brick, and the courtyards or spaces in front of the houses which served as courtyards were relatively clear. Besides sheep, only a few turkeys roosting in a deserted outhouse and one mud brick chicken coop were seen; there were no tannurs.

House 8 (figs. 68 - 73) had no courtyard and was L-shaped in plan. To the left of the entrance hall was a guest/living-room, to the right an L-shaped kitchen/storage room. The roof was flat with a low parapet and the ceilings, unusually, were of boards in the storage room and brushwood in the guest room. The floors were of the usual mud plaster, moistened and swept so thoroughly as to be treacherous. The walls of the guest room were white-washed with a dado of blue paint c. 1 metre high, and the usual striped woven mats were laid around the walls for seating (fig. 69). The front door was of wood but inside the house doorways were screened with curtains, as were the windows, most of which were unglazed and several of which had been blocked up so as to form

mere slits c. .15 x .50 metre.

Furnishings were simple. In addition to mats, cushions and curtains, the guest room was decorated with pictures, family photographs and the ubiquitous plush wall-hangings (a red plastic horse had also found its way in and looked strangely out of place). The storeroom contained bedding - cushions, quilts, mattresses and mats - foodstuffs, clothes, tools, cooking utensils, a few shelves, pictures and two painted wooden chests (figs. 70 - 72). The storeroom had a metal flue for a stove in winter, lighting was by pressure lamp and cooking was done on a primus. There was a mud brick bed platform to the left of the front door. The house contained twelve people: the parents, their eldest son, his wife and child, five other sons and two daughters. The older men and some of the younger ones wore traditional dress of jelabiya, kefiya and ageyl, sometimes with a European jacket, but the younger men were adopting European dress. The women wore traditional dress which differed in various details from that of the settled peasants; for example, solid colours with embroidery were preferred to floral patterns and the shape of the overdress was different.

The last area investigated, along the Khabur river, provided the greatest possible contrast to the dry, treeless landscape of the pastoralists. The landscape was green and well-watered, even in August, and several groups of pastoralists were encamped with their sheep, some in traditional black tents and others in less romantic ones of white

canvas. Beside the river there were orchards and plantations of poplar. The area from Hasake to Tell Tamer is mainly inhabited by Assyrian Christians, although there are also villages of Arabic-speaking Muslim farmers (fig. 77). The Assyrians entered the area from Iraq in 1933 and settled in this area with the aid of grants from the League of Nations. Those we met spoke only Arabic, and unlike the Armenians, the Assyrian Christians seem to have resisted the tendency to gravitate towards the towns, although many have left Syria for America (figs. 78 - 90).

The Christian villages were immediately recognisable because each had a church, although there was only one priest for ten villages. Some were very small and simple but others were more elaborate, with crosses, towers, coloured lights and juss plaster (fig. 85). Villages were built on the flat banks of the river, and unfortunately were so large and interspersed with trees and watercourses (fig. 78) that we found it impossible to obtain a plan in the time available. As far as could be seen, houses were built in straight lines along well-defined streets, which occasionally had a central gutter for drainage (fig. 79). There were large open spaces between the houses, but the dumping of rubbish tended to be confined to the abandoned house sites left by the many families that had emigrated to America.

The houses were rectangular or U-shaped in plan, of mud brick on stone or concrete foundations. Courtyards were unusual, and enclosing walls were usually low, c. 1 metre

high. Although roofs are now flat and overhang the walls slightly, the original houses were built with flat or pointed domes (figs. 80 and 90) like those seen immediately south of Hasake (fig. 17) or to the west near Aleppo, reflecting the scarcity of timber. In many cases the domed house was now used for storage and new flat-roofed living quarters had been built facing it. Another interesting feature was the use of the arch for doorways and windows (fig. 86). Many houses and courtyards were shaded by trees, and courtyards were crossed by stone paths; at least one house had a privy. Iron bedsteads took the place of bed platforms, and the mud brick or plaster silos and hen coops of the Muslim villages were not seen, but the ovens were of the same kind and as usual the courtyards were shared by cows (more numerous in this area), goats, sheep, geese, hens, turkeys and dogs. A wide range of crops was grown, of which cotton was the most important, but pomegranates, damsons, apples, grapes, maize, tomatoes, okra, peppers and sesame were grown for food as well as poplars for timber.

Living-room doors and windows were occasionally outlined in white; windows were large, glazed and heavily barred, and faced onto the street as well as the courtyard. A few houses had open porches built on for shade, and in the newer houses considerable use was made of concrete for foundations and roofs, the two areas most prone to harbour damp and insects when traditional building materials are used.

One of the houses we visited in the village of Tell

Romman south (figs. 87 - 90) was inhabited by a family of eleven; two grandmothers, the husband and wife, and seven children aged from thirteen to six months. The living-rooms were recently built of mud bricks on a concrete platform, the lower part of the walls being rendered with concrete and the upper with ordinary mud plaster. The roof was flat, finished with concrete, and overhung the walls. The front door was set in a whitewashed recess and opened onto a vestibule which was used as the kitchen and contained a metal china-cupboard and the usual aluminium kitchen utensils and primus stove. The room to the left was used for sleeping and storage of clothes and bedding; it had a stove for winter heating. On the other side of the hall was the guest room, very similar in furnishings to the English parlour of 100 years ago. It contained ten large plush-covered armchairs arranged round the walls and a large table in the centre; the windows were curtained and the whitewashed walls decorated with family photographs, framed pictures and plush wall-hangings (fig. 89). Rose-patterned paper had been fixed over the boards of the ceiling. Both this room and the bedroom across the hall had three large glazed windows with metal bars.

This was the last house in the village, so although unwalled the space delimited by the new and old houses, canal and cotton fields was quite private. The four rooms of the old house, now used for food storage and animal shelters, had originally had flat domes, but in two cases these had fallen down and had been replaced with flat roofs.

There were three iron and brass bedsteads in front of the house (fig. 90) and a cradle for the baby. Bread was baked in a tannur like those used elsewhere in the region but the bread itself was slightly different from the bread in the Muslim villages, containing more leaven. In summer the family ate at a concrete table in the shade of the trees on the canal bank. Their chief income came from cotton, but some food was grown for home consumption and in addition to a dog and a cat kept as pets and fed on scraps there were goats and chickens.

The Assyrian Christians wore European dress (figs. 80, 82, 83 and 89). Men wore shirts and trousers and women short-sleeved blouses or dresses with skirts that ended just below the knee. Older women usually wore headscarfs to cover the hair. Some of the younger girls were wearing jeans and fashionable T-shirts and the small children tended to wear shorts or nothing at all. The Christians themselves placed considerable emphasis on the differences in dress between themselves and their Muslim neighbours.

Discussion.

It is clear that these four groups differ considerably. Our concern is to determine how many of these differences would leave any archaeological trace and how much of the information collected is applicable to the excavated evidence from Mesopotamia. Women's dress, one of the most obvious means of ethnic identification, would leave little

trace except in the form of jewellery, which tends not to survive unless in graves. The Muslim villages visited did not contain mosques, but might have been identifiable as belonging to a different religion on the strength of differences between the graves. The large, independent guest houses of the Kurdish villages, however, should be distinguishable from churches on the strength of the ground plan alone, for the churches lacked the vestibule of the guest houses and their doors opened towards the middle of the long walls; in other buildings and rooms designed for human use, apart from entrance halls, doors were sited as near as possible to a corner.

The planning and layout of the villages were not distinctive except among the Kurds, whose practice of building in terraces up to the top of the tell presumably reflects their mountain origins, although some villages were built on flat ground. The Christian villages were not very different in layout from the Muslim villages along the Khabur and the Muslim Arab pastoralist and peasant villages shared too many similarities for one to be able to tell them apart by layout alone.

Such variation as existed in building techniques was inconsistent, and within the one village or even one house there would be living-rooms with foundation platforms or built directly on the ground, with roofs overhanging or cut by the walls, or with ceilings of board or brushwood. On the whole, the Christians used more concrete and the Kurds

more juss than the other groups, and the Christians and Kurds both used more and larger glazed window frames, but in each case there were houses which were exceptions to these rules.

The same was true of house plans; the various groups displayed a general tendency in favour of one kind of plan, but each village contained houses which would have been indistinguishable from those of other groups. To some extent this must be explicable by the fact that most of these groups are either new to the area or to settled village life, and have adopted some architectural features indigenous to the area while retaining some of their own. The basic house plan of the area was the three-roomed rectangular or L-shaped house with a room on either side of an entrance hall. Sometimes the house faced onto a courtyard, sometimes not - more often not, among the Christians and the pastoralists. The decorated guest houses of the area were completely lacking only among the Christians; among the Kurds and pastoralists there would be one large guest house per village, independent in the Kurdish villages but attached to a house among the pastoralists, and in the Arab peasant villages several houses might have smaller but still decorative guest rooms. Table 1 shows the differences in floor area between the houses illustrated, but although each was fairly typical of its village and the figures show the general trend, there were larger and smaller houses in each village.

The Arab pastoralist and peasant houses were alike in being plainly and sparsely furnished with similar objects; the Kurds' and Christians' contained more furniture and ornaments, the Kurds having a taste for brightly-coloured decorations and the Christians for tables and chairs. This, like the greater size and numbers of windows, may reflect the fact that these two groups were growing cash crops and had ready money, as much as any cultural preference. It should be borne in mind that the number of houses excavated with their original contents more or less intact is limited to those overcome by some catastrophe such as a fire, and even then the survivors may well have attempted to recover what they could from the debris.

It was rather surprising to find the three-room house plan with intercommunicating rooms so common in this part of Syria. In village houses visited in Iraq or in the Homs region in Syria all the rooms opened directly onto the courtyard without even so much as an entrance vestibule, even in newly-built houses of concrete and baked brick. Sinjab specifically states that each room of the Syrian peasant house is independent of the others and reached from the courtyard (1965, 7), and the American anthropologist, Sweet, who lived for nearly a year in a domed village of mixed pastoralist and peasant traditions not far from Aleppo, says of the houses there: 'Nowhere in a compound, in fact, are rooms connected with each other by doors or corridors; each room unit has only one exit and that to the courtyard' (1960, 111). Writing of Iraq both Wirth (1955,

418) and Reuther (1910, 2) make it clear that there, too, the typical Arab peasant house consists of individual rooms built as needed, quite independent of each other and opening directly onto the courtyard. Intercommunicating rooms are the exception in ancient Mesopotamian houses; from the later prehistoric period onwards the dominant house plan, even in northern Mesopotamia, is one in which a central space (open or roofed) is flanked on two or more sides by rows of rooms which open directly onto it. With the possible exception of the houses of the Uruk period (described in Chapter 4), the strong probability is that in the majority of ancient houses this central space was an open courtyard. The houses of the northern city of Nuzi (described in Chapter 7) constitute the only major departure from this long-lived form, perhaps because they represent a foreign architectural tradition.

Hansen's plan and description of the house of the wealthy Kurdish sheikh of a village in northern Iraq shows the sleeping rooms and store-rooms opening off a large central ivan (1961, 28), and Wirth illustrates the same arrangement on the smaller scale of the Kurdish peasant house (1955, Abb 9). The ivan, a porch or room open on one side, was common in the houses beside the Khabur south of Hasake, but it was missing in the villages we visited north of Hasake, where apparently Kurds, Christians and pastoralists have adopted a house plan peculiar to the area. The difference in plans cannot be explained on purely climatic grounds, for although intercommunicating living-rooms are

certainly an advantage in cold or rainy weather, the winter months in the north of Iraq are at least as cold and wet as in the area of the Khabur. There is one similarity between the ivan-house and the entrance-hall plan, however; both must be conceived and built as a single unit and are therefore less flexible than the house which consists of individual rooms around a courtyard, added or subtracted as required. The only archaeological appearance of the ivan (iwan in Arabic) is in Tepe Gawra Stratum VIIIA (see Chapter 5) in a building whose function was not certainly domestic.

Another difference between houses in this area and those in Iraq or elsewhere in Syria was the widespread occurrence of town-bought articles such as large metal-framed windows, wooden or metal doors, ceiling boards, furniture, ornaments and pieces of farm machinery, all of which suggest, if not great wealth, at any rate a cash economy. This was particularly marked in the Christian and Kurdish villages, but it is not entirely clear whether this reflects affluence or cultural preference. It is true that the Kurdish towns of northern Iraq sell ornaments of glass, china and plaster in shapes and colours not seen further south, but Arab houses of sufficient wealth also have their display cabinets of souvenirs. Some everyday items were identical in all four groups: cooking pots, floor mats, wall hangings, primus stoves, lamps, bedding, china and glassware. Only the pastoralists did not use tannurs for baking bread; the Christians did not use bed platforms, or mud

brick or plaster hen-coops. However, most of the differences in furnishings, like the felt mats and the kelims of the Kurds or the chairs and tables of the Christians were, like their distinctive dress, of perishable materials.

Of the houses illustrated, the Assyrian Christian house was the smallest in living-room area, both overall and per occupant, and the Kurdish house was the largest. The smallness of the Christian house may be attributable to the cost of building in concrete. Details of house areas and occupants are summarised in Table 1. These houses were representative of those visited in each village in size and construction, and since the villagers of Kheshuga and Kra'aysh estimated their populations at 100 people in 8 houses and 130 people in 9 houses respectively, it would appear that the houses illustrated for these two villages were also typical in terms of numbers of occupants. With the exception of the Kurdish house, which has four living-rooms plus the entrance vestibule, the numbers of occupants and living-rooms do not vary greatly, and there is correspondingly little variation in living-room area per occupant, especially among the three Muslim houses. The average ratio of living-room area per occupant in Upper Khabur villages generally (and not only in those houses illustrated here) was about 5.5 metres^2. There is greater contrast in the areas of storehouses and animal sheds, from the Arab peasant house with about 125 metres^2 of stores to the pastoralist house with none, so that if total roofed

area per occupant were made the basis for comparison instead of living room area, the relative positions of the houses would be considerably altered.

In all the villages visited it was considered desirable, indeed essential, that each married couple and their unmarried off-spring, if any, should have a room of their own. This requirement has also been noted in villages in the Iranian Zagros (Kramer and Watson, see below), in Iraq (Langenegger, 1911, 3) and in Syria (Sinjab, 1965, 7), and is widespread throughout the rest of the Near East. It is customary for a wife to reside in the house of her husband's father upon marriage, but the husband is obliged to provide her (and any other wife or wives) with an inalienable dowry and separate accommodation (Petherbridge, 1978, 197). Although the Hanafite school accords this practice the status of law, it seems to owe its strength and persistence to other than religious and legal considerations. In a society in which the entire family may sleep outside in summer within a few metres of each other, privacy within the family is not considered necessary or desirable; the origin of the custom should probably be sought in the fact that marriage is patrilocal and the bride's dowry, usually in the form of jewellery, represents her independence, entirely separate from the property of the husband's family.

The figures from the Khabur villages differ from those from

other areas. In her study of a Kurdish village called Shahabad in the Zagros Mountains of Western Iran, Kramer analysed the 67 houses containing a population of 418 people for differences between those owned by landholders and by landless peasants (1979, 139). She found that the mean household size among the landed was larger by only one person (6.8 compared to 5.7) and that the mean living-room area was not substantially greater in landed houses (60.5 to 50.5 metres^2), although total compound area was (307.4 to 199 metres^2). She states that dwelling area (i.e. living-rooms and kitchens) was a more reliable indicator of the number of occupants than was the number of rooms, the ratio working out at 9.75 metres^2 per person, considerably more than in the Khabur villages. In plan and construction, too, the houses she describes differ even from the Kurdish houses in our area; the living-rooms were not always intercommunicating and some houses had two stories, the second storey generally being added to provide a separate sleeping-room for a married son and his wife (Kramer, 1979, 148 and fig. 5.1).

Watson also describes a village, Hasanabad, in the Iranian Zagros (1978 a; 1978 b, 131) in which 41 houses hold 193 occupants. Both these Zagros villages thus had considerably smaller average households than Kheshuga and Kra'aysh. Most houses in Hasanabad were occupied by one nuclear family, although some housed extended families. With an average of 7.9 metres^2 per person of living space, the

houses in this village were again rather more spacious than those in the Khabur. Like Shahabad, Hasanabad also differed in layout from the villages in the Khabur region; the houses were built close to one another with narrow lanes and the occasional wider 'common' between. It should be noted that these Zagros villages were bigger than most of those in the Khabur area, and pressure on available building land may have been greater.

According to Watson, almost everyone in Hasanabad at the time the survey was carried out was poor, but nevertheless there was a perceptible economic heirarchy, defined by 'a series of discrete and continuous attributes' which she lists (1979 b, 133 - 134). They include factors such as the number and size of living-and storerooms, condition and furnishing of living-rooms, number and species of animals owned and so on. Some, such as one-storey or two-storey construction, are irrelevant and some remain unknown for the Khabur villages, but on the whole the Khabur villages are revealed as fairly affluent. The pastoralist houses, with few storerooms and a minimum of furnishings, are the 'poorest' of our four groups, but even so they had a well-kept and neatly furnished guest room, some glazed windows, good supplies of food, clothes, bedding and kitchen utensils and a high standard of maintenance. The other groups, according to Watson's criteria, were even wealthier, their deficiencies in some points being balanced out by their strengths in others; the Arab

peasant houses, for example, made up in storage space what they lacked in features and furnishings. Unfortunately, questions concerning numbers of animals and sources of income were not answered on such short acquaintance. It is always difficult to calculate farmers' real incomes.

The houses of both Khabur and Zagros regions differ in constructional and other details from those of the abandoned village of Khanaziriya in southern Iraq described by Nissen (1968, 107). Here the estimated total population of the entire village, which was spread out over a considerable distance, was 210 people in 30 houses, and in the 17 units actually planned there had been 110 inhabitants. The houses were built of tauf, with low side-walls and high, curved end-walls, and were roofed with arched reed-bundles covered with overlapping reed mats. No flat-roofed houses were noted. A typical house consisted of living-room, guest room, sleeping platform, tannur and enclosure wall, arranged so that the living- and guest rooms were in different courtyards or could be partitioned off with rugs. No differences were observed between guest and living-rooms either in construction or furniture, the latter consisting of a platform on the short side opposite the door for seating or storage of bedding. Storage facilities consisted of clay silos up to 1 metre in diameter or bins made by building thin walls of mud against the enclosure wall, and feeding troughs, stables for young animals and a water-cooling construction were also found. Each house had sheltered not more than three generations and house-

hold sizes ranged from 2 to 11, the 2-person household being an unusual one which consisted of a religious woman and her guard.

The village plan of Khanaziriya also differed from those of the Khabur and Zagros regions in several respects (Nissen, 1968, Plate 1). The houses were strung out along the bank of an irrigation canal, not concentrated into a compact settlement like the Iranian and Syrian villages, especially those built on the slopes of a tell. Nine houses in the southern part of the village formed a cluster, but the others were dispersed. Nissen's plan also shows that the tauf walls of the compounds were curving rather than rectilinear. A third difference is that the entrances to many rooms, especially living-rooms, were in the centre of one short wall, while several of the guest rooms had doors in the more usual position near the corner of a long wall, so that the arrangement is not made for purely structural reasons. In mud brick villages in southern Iraq compound walls are usually rectilinear, as in Syria, and flat roofs of beams and mud plaster are used on living- and guest rooms, although the buildings taper markedly towards the roof to conserve timber. Guest rooms of reeds like those found in the Marshes are also seen, and animal sheds and storehouses often have pitched or curved roofs of crooked timbers or reed bundles and reed mats without mud plaster. Instead of the panelled decoration of the Khabur, ornamental balustrades in stepped or dogs'-

tooth shapes are popular round roofs, and enclosure walls may be topped with camel-horn to deter intruders.

Watson and Kramer discuss in general terms how the results of their surveys might be of use in the interpretation of excavated settlements. In both Iranian villages, room function was indicated by size and architectural features. The living-room was the largest roofed space and could be distinguished by its hearth and carefully-smoothed floors; kitchens contained ovens, looms and storage bins. In Khanaziriya the ovens were situated in the courtyard, as they were in the Syrian villages, and living-rooms seem to have been on the whole rather larger than guest rooms; the position of the doors has already been noted. In the Khabur villages, although guest rooms might be large and distinguished by panelled facades, the chief difference between guest and living-rooms lay in the furnishings. Cooking took place on primus stoves which could be moved from room to room. In all the villages, there were differences in construction between rooms used for human habitation and those intended as stables or animal shelters. In the Iranian villages, floors of stables and store-rooms, unless converted from living-rooms, were less carefully finished than those of the human accommodation, which were ideally re-surfaced once a year. Mud-brick architecture is flexible, and as numbers and economic needs fluctuate family rooms may be turned into store-rooms and vice versa without much structural alteration. The distinction

between living-rooms and store-rooms or stables on the basis of the flooring was also noted in the Syrian villages and has been observed in villages in northern Iraq; it should be detectable archaeologically.

Kramer concludes that in Shahabad variations in economic status might be reflected in construction, materials and total compound area, that the developmental cycle of a family might be reflected in architectural changes and that the area of dwelling space might be a reliable indicator of the number of occupants, and suggests that these conclusions may be relevant to archaeological material (1979, 157 - 159), although she points out that the recovery of such information by excavation would require carefully redesigned sampling procedures. Watson on the other hand concludes one of her accounts of Hasanabad with a survey of a wide range of prehistoric settlement sites from Umm Dabaghiyah to Hacilar, without any very clear demonstration of the relevance of the Hasanabad material to the understanding of prehistoric villages (1979 b, 140). It seems supererogatory to survey a village in the Iranian Zagros in order to point out that the domestic architecture of Hassuna is different from that of Tell es-Sawwan.

As we have seen, ethnoarchaeology rests on the premise that an understanding of the behaviour which shaped the material remains of the past can be approached by testing hypotheses formed by analogy from the observed inter-

relationships between behaviour and material remains in the present. Two main types of analogy may be used: the 'continuous' or direct historical analogy, applicable in those areas of the world where there is demonstrable continuity between the present and the archaeological past, and the 'discontinuous' or 'new' analogy, which may be drawn from any preindustrial society, but preferably from one in a similar environment and with a similar economic system to the archaeological culture being studied.

Surveys such as Watson's and Kramer's have been undertaken under the assumption that there has been sufficient continuity in the Near East to justify the use of modern ethnographic data, not only in the interpretation of specific technological details, but in questions of prehistoric population structure, composition and numbers. According to Kramer '.... long term continuities in village architecture and spatial organisation appear to exist ....' (1978, 316) between Shahabad and prehistoric sites in the Zagros area, although they are not made more explicit, and in her account of Hasanabad and other villages in western Iran, Watson adopts a similar view: '.... the description of Iranian villages presented here is of greatest value to archaeologists working in Southwestern Asia, because of extensive culture continuity there' (1978 a, 3).

Even if it were possible to believe that the Greek, Roman,

Persian, Arab, Mongol and Turkish conquerors of the last 2,500 years alone had left the cultural continuity of Mesopotamia undisturbed, it may be questioned whether ethnographic evidence from the Zagros Mountains will be relevant to villages in the very different environment of the Mesopotamian plains. Within southern Mesopotamia itself, drastic soil salinisation has so impoverished the countryside that even so fundamental a technique as that of mud brick making is affected; high salt levels shorten a building's life considerably. Historical factors also played their part in this impoverishment, and a comparison of the conditions in the Iraqi countryside today and those described by Banks when he dug at Bismya over seventy years ago serves as a reminder that the economy of the area has been improved (Banks, 1912, 222). Banks's workmen, who belonged to the Bedier tribe, lived in portable reed houses and subsisted on a staple diet of dates, rice and barley bread, with a little mutton, tobacco and coffee, and some fresh fruit and vegetables when available. Some workmen were too poor to own a reed house and survived the intense cold of winter wearing only a dishdasha, without sandels or drawers.

Forty years ago, the Admiralty Handbook for Syria described only slightly more affluent conditions in the Khabur region, but although the area is technically part of Mesopotamia and is similar climatically, salinisation is less of a problem. Agriculture in the upper Khabur valley has been

improved to a level which it has not yet been possible to reach in Iraq, and the increased wealth of the Syrian farmers is expressed, among other ways, in the extensive use of timber and purchased fittings in their houses. The descriptions in the Admiralty Handbook indicate that at the time of the Second World War, the domestic architecture was as impoverished as the population, but unfortunately neither the Handbooks for Iraq and Syria nor the accounts of early European travellers describe house plans, so that it cannot be established whether the present divergence in plan type between the Khabur area and Iraq is of long standing, or whether it owes its development to the influx of refugees into north-eastern Syria since the First World War. Although travellers occasionally record having passed the night in a village, they seem invariably to have been too preoccupied with the numbers and appetite of the insect population to record architectural features.

Excavated prehistoric villages in Mesopotamia bear little resemblance to modern ones in either house plans or layout, with two possible exceptions, the partially excavated Level IV at Hassuna (fig. 97), in which a house opening onto a walled compound was found, although unlike modern villages the houses seem to have been built up against one another, and the unexcavated 'Ubaid side of Raidau Sharqi (fig. 110), which seems from surface traces to have consisted of compound houses reached by narrow lanes. There are no excavated villages from the historic periods, although

surface traces at Abu Salabikh may represent compound houses of the Early Dynastic period (Postgate, 1980). The excavated prehistoric villages display considerable diversity even within the same area and culture and, in southern Mesopotamia at least, operated in an environment very different from that which exists today. Modern villages belong to the world of Islam and are in touch with a long-established and increasingly industrialised network of towns and cities. Since interest in vernacular forms is a relatively recent phenomenon, it is difficult to adopt a diachronic approach, but a major effect of Islam on domestic architecture has been the separation between women's and men's spheres of influence. Although the complete seclusion of women achieved in the past by the wealthy families of the towns is neither practicable nor desirable in small towns and villages, contacts outside the house are carefully controlled and adult males outside the immediate family circle are in theory admitted only to the guest room, which is usually sited so that the guests have as little contact as possible with the rest of the house (e.g. Nissen, 1968, 107).

The guest room is the concrete expression of the Islamic attitude to hospitality, and is usually the largest and always the best-decorated room in the house. In early Mesopotamian society, identification with one's city seems to have been so complete as to leave no room for any concept of hospitality to foreigners (Oates, 1977, 478),

and although ancient courtyard houses often have one particularly large room it tends to be situated across the courtyard from the entrance, rather than discreetly next to it. The coming of the Arabs may also have introduced the nomad's spartan attitude to furnishings to the rest of the Near East, although in Mesopotamia furniture of expensive imported woods was probably always confined to the houses of the rich, while poorer households had palm-rib stools, chairs and tables of the type still made in Iraq (Salonen, 1963).

The inward-looking life of the courtyard house, with access regulated by a single gateway, is well-suited to Islam, although the house-type is of course much older. Wirth (1975, 75), has pointed out that there is a fundamental ideological difference between the society which builds such houses, and one whose dwellings are so constructed that household tasks and recreation take place in semi-public areas outside the house, in contact with the surrounding environment. Most prehistoric houses until the end of the Late Uruk period are of the latter type, and it is difficult to see how evidence from modern villages can be relevant to prehistoric settlements except at the level of basic technology. The techniques of construction, roofing and maintaining a mud brick building are much the same in twentieth centure Syria as they were in the Early Dynastic Period in the Diyala region or in the 'Ubaid period in the Hamrin valley. Otherwise, ethnographic analogies

serve to remind the archaeologist that the past was probably more complex than his reconstruction of events admits; in other words, they are 'a way of providing rather elaborate cautionary tales for the archaeologist' (Gould, 1980, 36).

Excavated towns and cities of the historic periods in Mesopotamia also bear little resemblance to modern villages. In the Khabur region, Level I at Chaghar Bazar (c.1500 B.C.) produced the incomplete plan of a house with two courtyards, from one of which a flight of stairs led to the roof or to an upper storey (Mallowan, 1936, 14). The rooms were very small, the largest being only 6 metres^2, though more may have remained unexcavated; although incomplete, the plan does not seem to differ greatly in arrangement from contemporary houses elsewhere in Mesopotamia. The living area of the house was apparently smaller than and differently arranged from modern houses in the area, and the way in which buildings cluster around the outside of the house suggests that, as in other ancient towns, pressure on available space was high and housing was more densely built than in modern villages. At Tell Chuera, west of the Khabur, the houses of the Early Dynastic settlement were packed closely together along narrow streets with central drains (Moortgat, 1960), a facility usually ignored in the open spaces of most villages.

One of the primary concerns of ethnoarchaeologists in the

Near East and elsewhere has been the estimation of population. The role of population growth in the development of settled agricultural life or the process of urbanisation has preoccupied many writers since Childe, and a great deal of research has been devoted to the subject (e.g. Smith and Young, 1972; Gibson, 1973, etc.). Overall population levels for a given region in a given period are usually calculated by multiplying the area of known sites in hectares by a fixed number of persons per hectare, generally 200 (Adams, 1965, 123) or 100 (Adams and Nissen, 1972, 29). One article on the subject refers to this as the 'SAP' formula, where S = the number of settlements in the region, A = area per settlement and P = the number of persons per unit area of settlement (Ammerman et al., 1976, 33 - 38). As the authors of this article acknowledge, P is the variable least subject to archaeological verification; hence the widespread and convenient assumption that it remains constant through time and between sites. For the purposes of detecting fluctuations in population between periods, total site area alone would be as useful an indicator as area multiplied by a blanket formula, especially if the possibility of underestimation of earlier levels concealed by overburden were taken into account.

The SAP formula ignores the probability, for which Wright's figures for four modern villages in southern Iraq provide support (1969, 23 and Table 1), that population density increased with settlement size. Wright found that, although

there was no linear relationship between population and area, there was such a relationship between population and number of houses. At the same time, both household size and density per hectare were higher in Diwaniyya, which had planned streets, modern concrete housing and better facilities than the mud-brick villages. Population densities in modern Near Eastern cities can be very high; Gulick's estimate of the population of Tripoli at 180,000 would give a population density of 450 persons per hectare, compared with 200 per hectare in Beirut and 117 per hectare in Cairo, although Gulick points out that in some areas of Cairo with old, multi-storied houses like Tripoli's the population density can be as high as 1350 persons per hectare (Gulick, 1967, 32). In contrast, the 1947 census of Iraq showed that the average density of the seventy old quarters of Baghdad was 102.2 persons per hectare (Adams, 1965, 24), less than the figure of 129 per hectare given by Wright for a small village like Daghghara (1969, 23). Within the old quarters, densities ranged from 34.7 to 330 per hectare and a similarly wide range has been found in Iranian cities, where the old, central districts provide poor quality high density housing in contrast to the affluence of the suburbs (Clark and Costello, 1973, 107 - 108). The fact that Baghdad more than most Near Eastern cities has been able to expand horizontally rather than vertically, with rural immigrants living in settlements of reed huts on the outskirts rather than occupying the old city centre, and

new housing taking the form of detached houses rather than blocks of flats, may help to explain its low overall densities.

Frankfort gives figures for Damascus and Aleppo which are equivalent to 400 per hectare, and calculates the density of ancient cities like Ur, Tell Asmar and Khahajah as 300 - 500 per hectare (1950, 103 - 104). Our figures for Tell Asmar and Ur would produce densities of 480 - 1200 and 571 - 1455 per hectare respectively (see Chapters 5 and 6), and while these seem very high it must be borne in mind that they represent excavated areas consisting entirely of houses; the overall densities of the cities as a whole would almost certainly have been considerably lower, although without knowing what proportion of the city area was occupied by housing it is impossible to say by how much. It is also probable that the figures are inflated by the inclusion of houses which had fallen derelict or were being used for purposes other than human habitation. At a guess, the overall population density would be less than the housing area density by something between 25% and 50%.

To control the potential variation of P, formulae such as SARP, where S = the number of settlements in the region, A = the area per settlement, R = the number of rooms per settlement and P = the number of persons per room, or SARFP, where R = rooms per unit area of settlement,

F = floor space per room and P = persons per unit area of floor space might be used (Ammerman et al., 1976, 33 - 38). The weakness of all such formulae is that P remains unverifiable and must be assumed to be constant, and to counteract this it is necessary to include as many variables as possible which can be directly counted and measured by archaeological means. The authors argue cogently that it may be easier to estimate population growth than population size itself.

Some twenty years ago an article was published on the subject of the relationship between floor area and settlement population which has been much quoted since. In it, Naroll presented estimates of population and floor area from the largest settlements of 18 different societies and suggested that his calculations indicated that the population of prehistoric settlements could be calculated as 1/10 of the floor area in metres^2 (1962, 587 and Table 1). The range of floor areas was from 0.84 metres^2 to 40.8 metres^2 per person. In a subsequent article, Le Blanc considered the evidence from villages in three new geographical locations and pointed out that the large standard deviations of floor areas among family units suggested that any given household was unlikely to be a good indicator of the village average, and that 'computing the number of poeple who occupied any small group of buildings from the floor area of those buildings is a dubious procedure' (1971, 210). Le Blanc suggested

that if living area alone were considered, the average floor area per person was reasonably close to 10 metres^2, and that if a general law of floor area were to be derived, it would be necessary to collect data on the specific use of house space. For most excavated sites in Mesopotamia, of course, such data are not available.

A further article on the subject criticises Naroll on mathematical and other grounds, demonstrating that Naroll's figures actually indicate that there will be increasingly less area per person as the population size increases, and that the result as he presents it has been rounded off without explanation (Wiessner, 1974, 343). Naroll's data do not fit his own predictions, for of the 18 societies considered, only 8 have between 5 metres^2 and 15 metres^2 of living space per person and the remaining 10 have less than 5 metres^2 or more than 15 metres^2, nor does he allow for different densities within different settlement types, although as we have seen there is some evidence that population density increases with size. None of these writers considers why a constant and universal relationship between population and floor area should exist and what fundamental laws of human behaviour will operate to produce it. The evidence from the Khabur and Zagros villages suggests that local relationships between floor area of living-rooms and population size may exist, determined by local building traditions and family sizes, both of which are in turn influenced by

a complex series of interacting variables. It is not yet clear that these local relationships have wider applicability through time and space to settlements with different house types and layouts, in which different factors would be operating upon mortality and fertility. Naroll's article nevertheless continues to be cited: Marfoe in his review of early Arad writes '.... These varying population estimates suggest that either an index of 6 metres^2 of roofed area is more appropriate for the Syro-Palestinian city (a figure not far from Kramer's 7 metres^2), or that Naroll's 10 metres^2/person index should be applied only to the entire roofed and unroofed area' (1980, 319). Setting aside the fact that Naroll himself apparently intended his figures to be applied only to prehistoric settlements, Marfoe has mistaken Kramer's figures. The figures for average areas of kitchens and living rooms in her Table 5.1 would yield an average of 6.5 metres^2 of living area (not roofed area, as stables and stores are not included) per person, but since some houses possessed more than one living room, the total average area of dwelling space per person was, as Kramer specifically states, c. 9.75 metres^2 per person.

As an alternative to Naroll's 10 metres^2/person index, Marfoe calculates the populations of the house areas at Arad by proceeding on the assumption that each living-room contained one nuclear family; he assigns families of 3 to living-rooms less than 20 metres^2 in area, 4 to

living-rooms below 30 metres^2 and 5 to areas above 30 metres^2. Although both sensible and economical, this method probably errs in taking for granted a close fit between family size and house area. Families follow developmental cycles, in the course of which their numbers grow and decline, without leaving the same house. Nissen's survey of Khanaziriya makes it clear that there was no direct correlation between family size and either total compound or dwelling area (1968, 108). Nevertheless, the identification of living rooms seems to offer the best hope of arriving at an accurate estimate of the population of an ancient housing area. It has already been observed that at the present there is a widespread preference throughout the Near East for the provision of each married couple with a separate room. The house of a three-generation nuclear family (grandparents, married son and wife and unmarried children) would therefore require at least two living rooms, a two-generation family (man and wife and unmarried children) at least one. At both Early Dynastic Tell Asmar (fig. 135) and Larsa period Ur (fig. 150) there are long, narrow houses with one, or at the most two, rooms of a suitable size for living and sleeping in (i.e. at least 2 metres in width by 2 metres or more in length). These houses occur side by side in groups, and seem to result from the subdivision of houses with square ground plans; square houses often have two or more living rooms, suggesting that they were occupied by large, extended families while the long, narrow

houses were occupied by smaller, nuclear families.

Textual confirmation of this suggestion comes from Old Babylonian Nippur, where Stone has found that changes in one house from square to narrow plan coincided with a change from extended to nuclear family occupation (1981, 19). For the purposes of estimating the population of housing areas in ancient cities, it may therefore be assumed as a working hypothesis that each living room housed a two-generation nuclear family, parents and children. The difficulty lies in estimating accurately the average size of family in the past. The average household in the modern Near East is between 6 and 7 persons, with minimal differences between villages and cities (Gulick, 1969, 130 - 134). In Baghdad in 1956 the average number of people per household was 6.96 (Langley, 1962, 310), in Amman 7 and in Tripoli 6.7 It is of course possible to find a considerable range of household sizes even among settlements of the same size in the same area. Patai cites surveys of 8 Lebanese villages in which the average number of persons per household ranged from 5.5 to 8.3, and of 5 Palestinian villages in which the range was 5.2 - 7.4 (Patai, 1962, 85). In the Khabur villages, the number of people occupying a single room (including infants) ranged from 2 to 10, although the smallest number of people found occupying a single house was 4.

Even allowing for the fact that household is not the same as family size, and may include grandparents or unmarried relatives, these figures refer to a period of rapid population growth and cannot be assumed to have any relevance to conditions in the past. Russell has suggested that the figure of 5 persons per nuclear family, often used in calculating ancient and mediaeval populations, is too high, and that a figure of about 3.5 is more generally accurate (1958, 9). For the average early modern European marriage, Flinn calculates that 2.5 - 3 children survived to adulthood; he explains that, although this might seem well in excess of what was required to maintain a stable population, not all women married and not all women who married did so below the age of 50 (1981, 33). In this context, it is of interest to note that figures from Palestine in 1945 indicate that Muslim women bore an average 9 - 16 children of whom about 6 could be expected to reach adulthood (Patai, 1962, 95).

There is very little information on family sizes in ancient Mesopotamia. In an article on household and family, Gelb discusses a Pre-Sargonic text from the archive of the temple household of Bau in which 12 families with 26 children are listed; the abnormal structure of the 12 families leads him to conclude that they have been induced by poverty to place themselves as clients of the temple household. An Old Babylonian text lists 22 children in 10 families, so that the average number of

children per family in both texts is 2.2. At the other end of the scale are two votive inscriptions, one from the Pre-Sargonic, the other from the Sargonic period, both of which name the votant, his wife and at least 8 children. (Gelb, 1979, 61 - 65). Although the evidence of only four texts cannot be taken as conclusive, it at least indicates a possible range of from 4 to 10 persons per family, a range comparable to that observed in the modern Near East. Information on other factors which would have affected population size is unavailable; it is possible, for example, that a significant percentage of women in ancient Mesopotamian society did not marry for economic or religious reasons, or had their reproductive life curtailed by early widowhood and destitution.

It might be thought that, if insights into the population structure of ancient cities are required, it would be reasonable to seek them in modern towns and cities rather than in modern villages. There are, however, a number of objections to such an approach. In the first place, contact with European technology took place initially in the cities and has radically altered both their way of life and their physical appearance. There is now scarcely a small town in the Near East which is not supplied with electricity, drainage, piped water, public transport, educational and health facilities and Westernised concrete architecture. One may suspect that life in the villages has also been changing, but in the absence of

detailed accounts of rural conditions in the past it is difficult to assess the degree of change, and the continued use of traditional materials such as mud brick is sufficient to persuade some observers that technological change has had little effect on the countryside.

Secondly, the population of the Near East has in the course of the last century and a half undergone a transformation comparable to that experienced in Europe in the course of the Industrial Revolution, with a general and rapid growth in population and a long-term change in its composition. Despite economic and cultural decline, there was a high degree of urbanisation in the late Ottoman period, partly because of rural insecurity, the absence of a strong rural-based feudal system, more favourable government treatment of townsmen and the importance of pilgrim and transit traffic (Issawi, 1969, 105). In the course of the nineteenth century the region was gradually drawn into the international network of trade and finance, and while the development of new means of transport meant the decline of the caravan trade and the tribal population, the rural population rose, and the destruction of local handicrafts by European imports helped to keep relative urban population levels constant until well into the twentieth century in some areas.

Information on the demographic system which prevailed before the population expansion of the nineteenth century

is almost non-existent. Islam, unlike Christianity, does not involve itself officially with the rites of passage of the faithful, and there is no equivalent in the Islamic world to the parish record of births, marriages and deaths which provides the material of historical demography in Europe. Avoidance of registration and censuses was a feature of the countries of the Ottoman Empire because, as the Admiralty Handbook for Iraq in the Second World War points out, they were regarded as the inevitable prelude to conscription and taxation (1944, 352). Reliable official censuses were not taken until the twentieth century.

In Iraq, the first Official Census was taken in 1947, but there are some figures from British Consular Reports, a partial Ottoman Census, British population estimates and Iraqi government enumeration for the period from 1866 - 67 onwards (Hasan, 1958, 339). These show that in the years between 1867 and 1947 the population of Iraq almost quadrupled from 1,280,000 to 4,816,000. The rate of increase was not uniform throughout the country. Unfortunately, details of birth and mortality rates are available only for the three major cities of Baghdad, Mosul and Basrah and for the period since 1927, and there is not even a rough estimate of the discrepancy between the registered and actual figures (Hasan, 1958, 341 and Table III). Such evidence as exists suggests that the better health conditions and living standards in the

three major cities entailed lower death and infant (under one year) mortality rates than in the smaller towns and rural areas, while the gross birth rate was probably lower in the cities because of the decline in the size of family. Infant mortality and death rates fell from 1927 to 1947, while the birth rate remained relatively steady. The rate of natural increase (the difference between the gross birth and death rates) shows an average of 4 per 1,000 throughout the period, but regional differences between rates of natural increase and population growth indicate that internal migration was taking place between the regions, especially from the disadvantaged south towards the Central region and Baghdad.

With regard to the composition of population, Hasan estimates that around the middle of the nineteenth century Iraq's population of just over 1.25 million consisted of nearly 0.5 million nomads involved in the caravan trade, slightly over 0.5 million 'rural' (i.e. agricultural and pastoral) population and just under 0.3 million living in larger or smaller towns. By 1947 the population had grown to about 5 million of whom only 0.25 million were nomadic, 2.7 million were rural and about 1.8 million were urban. The nomadic section of the population thus declined relatively and absolutely while the rural population rose relatively and absolutely until 1930. After 1930 the urban population increased relatively compared with the rural population, probably because of internal

migration (Hasan, 1958, 349 - 350). Since 1947, the population has continued to grow, with falling mortality, steadily high fertility and a continuingly high rate of migration to the towns, whose relative share of the population is steadily increasing (Lawless, 1972, 98).

In earlier periods, even gross figures for the population of major cities are usually based on no more than the wildly fluctuating estimates of early travellers. For early nineteenth century Baghdad, for example, such estimates ranged from 50,000 to 100,000 (Issawi, 1969, 103). In his study of Aleppo, Sauvaget estimates the population at the beginning of the nineteenth century as in the region of 250,000, and adds 'Les évaluations des voyageurs européens sont pleines de fantaisie', noting that the only account of any value described the seventeenth century city as possessing 13,360 hearths (1941, 238 and footnote 908).

It is clear from this that detailed demographic information is available only from a period after contact with industrialised Europe had brought about radical changes in population size and composition throughout the Near East. Very little is known of the demographic system of the area in earlier times, in contrast with Europe, where painstaking research into parish records has built up a picture of the demographic system from about 1500 onwards. The subject is an extremely complicated one and employs

some highly sophisticated statistical techniques. Simply stated, in early modern Europe population growth was limited by the availability of cultivable land and existing levels of agricultural productivity. It was necessary for societies to control their rates of natural increase to levels which could be accommodated by migration, the intake of new land for cultivation, or improvements in technology. The Malthusian positive checks of wars, disease and famine restrained population growth; according to Flinn, the demographic crisis was one of the determining elements of the European demographic system of the early modern period, and war, famine or epidemic, or a combination of all three, could multiply the mortality rate of a region many times (1981, 15). The sudden rise in the rate of population growth in the nineteenth century may be attributed chiefly to a decline in mortality as a result of the deminution in violence and persistence of these crises.

If mortality was largely outwith man's control, society exercised more power over fertility. A fine balance had to be maintained between population decline, undesirable on economic and military grounds, and population growth beyond the ability of agriculture to support it. Since marriage was the chief determinant of overall fertility rates, some restriction on marriage was the first check (the Malthusian 'preventive' check) to population growth. Both the age at which women marry and the proportion of

women ever married have a profound effect on fertility levels.

There is little evidence of fertility and mortality rates, or of practices which would affect them, in ancient Mesopotamia. Little attention has been paid to factors such as the age of women on marriage, and it is generally assumed that marriage took place soon after puberty, although customs such as the requirement for older daughters to marry first would have affected the average age and thus the overall rate of fertility (Breneman, 1971, 1). Infanticide may have been practiced in some periods (some of the infant burials in the Larsa period houses at Ur suggest such a possibility), and institutions involving celibacy existed. Widows who became part of a temple household had no family life (Gelb, 1979, 24), and while the celibacy of the nadītu women may have had only limited implications for the growth of the population at large, it was an important factor in the transmission of property ownership within a particular class (Stone, 1982, 50). Of Old Babylonian Sippar, Harris says only that there are ' ... many instances in which three or more children are known ....' and that '.... many Sipparians are attested in texts for a surprisingly long period of time ....' (1975, 351 - 352). Although demographic data from textual sources are liable to be partial and inaccurate, reflecting trends only among the wealthier sections of the community, a systematic study of demographic factors in

the texts would be preferable to uniformed guesswork.

Even in the absence of detailed records, it is clear that the Mesopotamian demographic system differs from that of Europe in several important respects. The area has for long been a buffer zone between empires: in two thousand years it was invaded by Greek, Roman, Persian, Arab, Mongol and Turkish armies. Its recent population history must be seen in the light of the fact that, already in decline from Late Abbasid times, it endured successively conquest by the Mongols (to which all subsequent ills are often attributed), plagues, floods, a series of protracted power struggles and finally a lengthy period of maladministration and neglect. Although surveys and excavations reveal periodic disruptions in the economic life of ancient Mesopotamia, they were rarely so drastic or long-lasting.

There have also been fundamental differences in land usage and agriculture between Europe and Mesopotamia. As Gibson has shown, conditions in Mesopotamia favour extensive irrigation agriculture, as opposed to the intensive rain-fed cultivation of northern Europe. The tribal system, with its inherent social instability and flexibility, is well-suited to this type of agriculture, spreading the risk (or profit) evenly through kinship ties (Gibson, 1974, 7 - 17; 1976, 54). Part of the flexibility of the tribal system lies in the fact that in times of stress

the settled agricultural element of the tribe has the option of abandoning its land, perhaps only temporarily, and joining the nomadic sector of the tribe.

Cities and towns are unlikely to be accurate indicators of overall population trends for a variety of reasons. Any attempt to calculate the population of a single settlement on the basis of an excavated housing area necessarily assumes that the population remained static for long periods: witness the time-span covered by the Larsa period houses of Ur. It is rarely possible to compare such an area with a sample of comparable size from the same or other levels at the same site or from contemporary levels from other sites, and hence its representativeness remains problematic. There is the additional problem of determining what proportion of a site is likely to have been occupied by housing and what proportion by public buildings, open spaces and so on; it is unlikely that all the houses in an area like the AH quarter at Ur remained fully occupied throughout the life of the quarter, but it would be difficult to determine archaeologically which were derelict or in secondary usage as stables or stores at any given time.

It is likely that mortality would have been higher in cities than in country areas, with the health risks consequent upon over-crowding, contaminated water and the inadequate disposal of waste. Cities probably suffered

more, too, as the targets of war and invasion, so that the depopulation which may be seen from time to time in the cities was not always so drastic over the countryside as a whole (see, for example, Tell Asmar at the beginning of the Akkadian period, Chapter 5 and Adams, 1965, 55). On the other hand, the fate of Ur and Nippur in the Old Babylonian period seems to be reflected in a general decline in settlement from the Old Babylonian to the Kassite period (Chapter 6 and Adams and Nissen, 1972, 39; Adams, 1981, 168). For more recent times, Issawi has remarked upon the tendency of peasants in the Near East to flee to the cities in times of famine, believing, rightly, that the government would not let townsmen starve (1966, 106), and Abu-Lughod states that the city before the nineteenth century lost population through mortality and that therefore the deficit plus any growth had to be made up from migration (in Lapidus, 1969, 120). In early modern Europe, it has been established for some time that towns over a certain size were net consumers of population, draining surplus from rural areas, and recent research indicates that the urban population could be divided into permanent residents and immigrants, the residents being on the whole wealthier, better housed, more resistant to disease and more fertile than the immigrants, who lived in crowded conditions, could not afford early marriage and were vulnerable to hitherto unencountered urban diseases. It could therefore be argued that the immigrants perpetuated high urban mortality rates (Flinn, 1981, 23).

There is no direct evidence that these processes were at work in ancient cities, and it is unlikely that free rural immigrants would appear in the texts unless they were numbered among the destitute and impoverished families who found a place in one of the great temple households (Gelb, 1979, 61); it is conceivable that such institutions played a part in attracting people to the cities. Estimates of settlement population may improve in future in the light of further excavation and research into textual evidence on demographic factors, but their usefulness is at present limited to the context of wider settlement surveys, which are more likely to provide evidence of fluctuation in gross population levels. The finer details of the pattern, the constant adjustments between nomadic, rural and urban populations in response to changing political and economic conditions, epidemics, wars and natural disasters, are probably irrecoverable.

TABLE 1: HOUSE AREAS IN NORTH-EASTERN SYRIA

	Kheshuga House 3	Kra'aysh House 3	Abu Hejira House 8	Tell Romman
No. of living-rooms	3	5	3	3
Living-room area	64 m^2	90 m^2	67.5 m^2	44 m^2
No. of animal/storehouses	7	2	-	4
Area of animal/storehouses	125 m^2	48 m^2	-	52.5 m^2
Area of courtyard/animal pens	482 m^2	358 m^2	-	-
Total no. of rooms	10	7	3	7
Total room area	189 m^2	138 m^2	67.5 m^2	96.5 m^2
Total house area	671 m^2	496 m^2	67.5 m^2	96.5 m^2
No. of occupants	12	14	12	11
Living-room area/occupants	5.3 m^2	6.4 m^2	5.6 m^2	4 m^2

CHAPTER 3

The Early Prehistoric Sites.

Research into the origins and development of agriculture has led to the investigation of many early prehistoric sites in the Near East. Many of these have been dug since World War II, and although not all have been published as fully as one might wish, the meticulous excavation techniques and multidisciplinary approach employed by many of the expeditions involved have produced a mass of information which is not always available for later periods. Because of the large numbers of sites and the detailed nature of the information it has been necessary to limit the sites discussed to those which fall within the boundaries of the modern state of Iraq, rather than within Greater Mesopotamia as in later chapters. While there are traces of contact between early villages in Iraq and those in northern Syria or south-western Iran, the domestic architecture of the area pursues on the whole an independent course of development.

The earliest substantial architectural remains occur at the early agricultural site of Qal'at Jarmo in the Zagros (Braidwood and Howe, 1960, 26); 16 building levels, of which the lower 11 were aceramic, probably cover the period of the latter half of the seventh millennium B.C. The site, which was partly eroded by a wadi, measured only 90 x 140 metres with a maximum depth of deposit of 7 metres, but a system of test pits failed to recover the overall village plan.

The excavators guessed that there were probably no more than 25 houses with a population of 150 at most.

No plans exist of the domestic architecture of Jarmo, but a reconstruction of a representative house in Level 5 of Operation II has been published by Flannery (1972, fig. 5); the reconstruction does not entirely coincide with the authors' description of the house. Like other houses at the site, it was rectilinear, with walls of tauf (tempered with straw or grass) on stone foundations (Braidwood and Howe, 1960, 38). Floors generally consisted of a layer of clean packed silt resting on a bed of reeds, with simple earth floors in courtyards. The Level 5 house had one long narrow room, 5.6 x 2.2 metres, which was partitioned off towards one end and was probably the living/sleeping quarters. A narrow hallway along the south side of the house led from this room and the probable site of the outside door to a small courtyard on the west, which contained quern fragments and had apparently been used for food preparation. Between the courtyard and living-room were four rooms, each 2 x 1.5 metres, which were probably used for storage. One of these rooms contained an oven, which was fired from the courtyard; a house in Level 6 contained a better-preserved example of this type of oven, which had a tauf dome and a semi-circular chimney built into the wall above the fire-door (Braidwood and Howe, 1960, 42). The wall or partition running down the centre of the Level 5 house may have provided support for a gabled roof like those in use in the area today. Stone door sockets indicate the use of wooden

doors, and long stones with carefully drilled and decorated ends were probably intended to receive the top of the swivel post. Of 50 charcoal samples examined, 45 were oak and 2 tamarisk, suggesting that the vegetational cover was similar to that in the area today, although perhaps more plentiful.

The later levels of Jarmo may have overlapped chronologically with those of the 'proto-Hassuna' culture excavated at Umm Dabaghiyah, Tell Sotto and Telul eth-Thalathat Tell 2. Pottery and other artefacts from these three sites in the Sinjar plain are clearly related to the 'archaic' phase of the Hassuna culture, and at Tell Sotto, where levels containing this assemblage are overlain by those containing materials very like those from the early levels of Tell Hassuna itself, the excavators have suggested that this should be known as the 'proto-Hassuna' phase (Merpert, Munchaev and Bader, 1978, 49).

The site of Umm Dabaghiyah today lies between desert and steppe, on the limit of possible dry-farming, although a number of other prehistoric mounds in the area suggest that the rainfall may have been more reliable in the sixth millennium B.C. than it is today (Oates and Oates, 1976b, 101), and remains of marsh plants also indicate wetter conditions (Helbaek, 1972a, 17). Salt and gypsum were locally plentiful (Dorrell, 1972, 69), some wheat and barley were grown and a few domestic animals were kept (Bökönyi, 1973, 9), but it would have been necessary for the ancient inhabitants to import their fine flint, obsidian, material for ground stone

tools, exotic stones for beads and mace-heads, timber and certain plant foods (Kirkbride, 1974, 89).

The excavation of Umm Dabaghiyah revealed a number of unusual architectural features. The earliest traces of occupation at the site consisted of a number of small circular or oval gypsum-lined pits dug into virgin soil which may represent a temporary settlement in use while permanent buildings were being erected (Kirkbride, 1975, 4). Following this, there were four main building levels and the basic plan laid down in Level IV (fig. 92) persisted until Level II, Level I being badly eroded, although the quality of building and planning deteriorated throughout the life of the settlement (Kirkbride, 1973b, 206).

In Levels III and IV the centre of the settlement was occupied by an open space bounded on the west by houses and other small structures and on the remaining three sides by two large storage blocks (figs. 92 and 93). The southern block, which was 45 metres long, was L-shaped; its walls, founded in Level IV, were re-used or rebuilt until the end of Level II (fig. 94). The northern block was 25 metres long and both blocks were 6.45 metres wide, with a cross-wall or pair of opposing interior buttresses every 1.45 - 1.75 metres dividing the buildings into rows of small rooms measuring about 1.50 x 1.75 metres. Each building has a tower-like projection of four rooms at right angles to the main, east/west axis; the 'tower' in the northern block and its adjacent rooms were at one point adapted for use as a

house. Within the southern block there was a central passage 1 metre wide, but neither block had a door to the outside and almost all the cells were doorless. Most of the rooms were empty, apart from a few rooms in the southern block of Level III, one of which produced over 2400 baked clay sling bullets and about 100 large (c. .15 metre in diameter) baked clay balls as well as a single flint arrowhead and a mace-head (Kirkbride, 1974, 88).

The houses of Umm Dabaghiyah resembled the large blocks in proportions, with small rooms whose size probably reflects the availability of roofing materials, but the tauf walls of the houses were thinner (.40 - .45 metre as opposed to .50 metre) and less heavily tempered than those of the blocks. In some early walls clay shapes resembling mud bricks could be detected, indicating that the walls were built up from long, plastic strips of clay (Kirkbride, 1973a, 4). The walls of the large blocks were unplastered and their floors were of slightly hardened earth, but house floors and walls were covered with hard white gypsum plaster and were frequently altered and rebuilt; the excavator has suggested that the houses were built by their occupants while the blocks were the work of specialist builders (Kirkbride, 1974, 86).

The care with which the blocks were built, their central position and their regular plans indicate that they fulfilled some specialised function of major importance to the settlement, and in view of the absence of doors and thickness of the walls it seems most likely that this was

storage, probably of some semi-perishable substance. The inhabitants of the few small houses of each level seem to have been engaged in an extensive trading venture. The possible nature of this venture is indicated by the proportions of the faunal remains; onager and gazelle formed 68.5% and 15.9% of the sample compared with only 11.4% of domestic animals. It seems plausible that the commodity being traded was animal hide, perhaps treated with the salt which was locally available and dried on racks like those on the west of the Level IV settlement (fig. 92); no doubt other animal products such as dried meat, horn and sinews were traded as well (Kirkbride, 1974, 89).

Debris in the courtyards of the Level III houses indicated that the jointing of the animals took place there. The central houses of Level IV fell into disrepair but were reoccupied a little later, and at the same time a group of houses was built along the south-west edge of the village (fig. 93). These south-western houses were larger than those in the centre (see Table 2 at the end of this chapter) and were provided with carefully-plastered round windows, a feature missing from the central houses. The central houses are unusually well-preserved; at the end of Level III the floors were swept and the doors blocked before the site was deserted, and the builders of Level II simply levelled off the walls and built over them. The walls of Level III thus remained to a height of almost 1 metre, preserving features which have not survived at other sites and providing a remarkably complete picture of the domestic arrangements of

the inhabitants (Kirkbride, 1975, 5).

Unlike the south-western houses, the central houses had individual walls. Doorways were only .50 - .74 metre wide and about the same in height, and were roughly arched; the usual method of progression from one room to another must have been by wriggling on the stomach. In the middle house the kitchen was divided from the room to the north by a plastered arch spanning the width of the room. Each of the Level III settlement houses has two or more small rooms, one of which was a kitchen. In each of the central houses there was an oven outside the southernmost room with an opening through the base of the wall protruding into the room to form a hearth with a plaster kerb. In an arrangement similar to the Level 6 oven at Jarmo, plaster chimney flues were enclosed by circular or semi-circular plaster hoods which usually came down onto the kerb leaving only the fire opening free. Gypsum plaster was also used to form shelves on one side of the chimney hood, niches (perhaps for fuel) in the lower parts of the walls, and semi-circular depressions with sills which were positioned against the walls and probably used for food preparation.

Plaster cupboards in the corners could have formed steps; in two of the houses there were small plastered toe-holds on either side of the corner above such steps. A similar arrangement using short logs set across a corner as rungs is occasionally used in modern Iraqi houses in the Hamrin valley to gain access to the roof. Only one of the central houses had

a door to the outside; it had a high sill and led to the lane on the west. The other two houses had crawling doors leading into small yards which surrounded the ovens, so access must presumably have been via the flat roof, as in the doorless storage ranges. The amount of debris indicated that the original height of the walls was not much more than the 1 metre to which they were preserved, and in several Level II houses collapsed roofs were found in which reed mats were laid over rafters, followed by a layer of gypsum plaster and finally packed mud (Kirkbride, 1973a, 3). There was no sign of any second storey.

The middle house of the central block in Level III was decorated with wall-paintings (Kirkbride, 1975, 7). The east wall of the kitchen bore a frieze of onagers and hook-like objects, the middle room a design of parallel wavy lines, with a design of short wavy lines with dots above the lintels. Geometrical patterns also occurred. The paintings were usually in red ochre, with some black and yellow, and in several cases there was more than one layer of painting on the same wall, older paintings being covered with a layer or two of white plaster before a new one was applied. The upper paintings were always cruder in execution than the lower, which were usually large figures of animals. One is loth to embark upon the interpretation of these paintings, but the appearance in them of onagers is of interest.

The proportion of storage to housing in the settlement is so large as to raise the question of whether the inhabitants

of the few small houses could have undertaken unaided every stage of the process from hunting to transport of the finished products. Kirkbride suggests that Umm Dabaghiyah was a trading-post, perhaps the off-shoot of some larger centre and an entrepôt between a settled farming culture and hunting bands occupying the steppe and desert (1974, 89). Even at its largest, the settlement consisted of only 9 or 10 houses, usually collected in two groups adjoining the two storage blocks; in Level II (fig. 94) a change took place and the two groups were each replaced by a single, larger house, an arrangement which may reflect the control of the storage blocks by some sort of lineage group. The absence of burials and the periodic desertions of the site (perhaps to allow the site to cleanse itself of the effluvium of its accumulated animal products, after the fashion of a mediaeval palace) together suggest that occupation was not on a permanent basis.

So far, comparable assemblages have been excavated at Tell Sotto (Merpert, Munchaev and Bader, 1976, 54; 1977, 95; 1978, 44) and Tell 2 at Telul eth-Thalathat (Fukai, Horiuchi and Matsutani, 1970, 22; Fukai and Matsutani, 1977, 48) as well as at other sites in the Sinjar plain which have not yet been published. As at Umm Dabaghiyah, the first occupation at Tell Sotto and Telul eth-Thalathat was represented by pits cut into bedrock, which were variously used as temporary dwellings, primitive pottery kilns, storage pits and quarries for the rectilinear tauf houses which formed the permanent settlement. At Thalathat, the tauf structures of Level XV

which overlay the early pits were themselves badly damaged by pits from later levels and it is only possible to establish the fact that they were rectilinear, with small, irregularly-shaped rooms.

At Tell Sotto, a substantial area of the 'proto-Hassuna' Level 7 has been excavated (fig. 95), revealing parts of at least two houses (29 and 78), storage cells and a curious structure of troughs and walls. The complete house, No. 29, had one long room divided by internal projections with storage bins at each end; the storage complex and oven to the north-east may belong to this house as well, in which case its area would have been 61 metres^2, not 23 metres^2, but it is also possible that this 'storage complex' was a separate dwelling. The plan of Level 7 would then show three houses of similar plan, with a long rectangular room divided into storage bins at one or both ends. To the south-east of House 29 across an enclosed courtyard was the series of substantial parallel walls with T-shaped ends between which were sub-rectangular troughs which the excavators interpreted as a water storage system (Merpert, Munchaev and Bader, 1977, 95). Trough No. 84 was gypsum-plastered and a small channel ran under the south wall, so that the installation could be drained. It seems inefficient to store water in shallow troughs in an area where evaporation losses would be high, and they may have been used for some process which involved soaking. Compared with Umm Dabaghiyah, the houses of Tell Sotto are relatively spacious; the storage is on a household rather than an industrial scale, as befits a farming village, and there were

infant burials beneath the floors.

The Hassuna culture proper probably spanned the greater part of the sixth millennium B.C., overlapping with the Samarra and Halaf cultures; Hassuna sites are widely distributed within the present zone of rain-fed agriculture in northern Iraq on both sides of the Tigris, although the culture does not seem to have extended into the Zagros. The earliest excavated level at Tell Hassuna, 1a, produced no permanent structures and was thought by its excavators to represent a series of three campsites, with apparently sterile deposits in between (Lloyd and Safar, 1945, 262). Traces of woven reed matting were found, and an infant burial in a jar was associated with the third camp, so there may have been light, semi-permanent structures; it has been suggested that the presence in 1a of tools known as 'hoes', which are not found on other farming sites of the period and are therefore presumably non-agricultural, is a further indication that the campsites represent a genuine semi-nomadic population and do not merely coincide with an open space in the centre of the settlement (Oates and Oates, 1976b, 102).

In Level 1b walls were found and in 1c there are recognisable structures with walls of tauf tempered with straw or pounded scrub, .20 - .45 metre wide (fig. 96). Circular clay ovens of the usual tannur type were found and the houses were furnished with spherical grain bins of unbaked clay coated with bitumen or gypsum, sunk beneath the floor and

plastered into place. In addition to the two rectangular houses (both fairly sizeable - see Table 2), there was a circular building divided into compartments which contained pottery, ovens and wood ash.

No further circular buildings were found. Samarran pottery appeared alongside Hassuna wares in Level III, and Level IV produced the complete plan (fig. 97) of a house which is probably best known from its reconstruction drawing (Lloyd and Safar, 1945, fig. 32). The house had several rectangular living-rooms, two of which opened off a long, narrow hall, and several other rooms, larger than the Umm Dabaghiyah or Tell Sotto storage cells, which had no doors and which the excavators thought were storage rooms entered over thresholds set high in the walls, although the difficulty of distinguishing features in tauf walling should not be underestimated. As in the Umm Dabaghiyah and Tell Sotto buildings, there were internal buttresses at regular intervals to support roof beams and strengthen the walls, tauf being a less rigid material than mud brick. As reconstructed, the house would have had a gabled roof like those found in the area today.

Rooms 1, 3 and 4 and part of corridor 2 were paved with straw-tempered plaster and the threshold to Room 5, which contained the oven, was protected with sherds. Just outside the door from Room 5 to the courtyard was an oval hearth, and on the opposite side of the door next to Room 1 was a bench. Two small cavities in the walls of Room 4 contained

human bones, apparently from the same body, and the remaining contents of the house included Hassuna and Samarran pottery, sling bullets and an obsidian blade. The houses of this level appear to have been built around shared courtyards; a stone-lined drain led from courtyard 13 to another open space, 10.

Only a small area of Hassuna was excavated, but it is sufficient to indicate that there are both differences and similarities between its architectural tradition and that of Yarim Tepe 1, to the west of Hassuna in the Sinjar plain. The earliest occupation is once again represented by pits in the bedrock, following which there are 12 building levels in which circular and rectilinear structures occur side by side; the last three levels are damaged by later pits and the cemetery of the neighbouring Halaf settlement (Merpert, Munchaev and Bader, 1977, 68). The circular building 319 of square 37 in Level 12 seems to have been a domestic structure, since it contained the usual range of household debris including pottery and animal bones, although with a diameter of only 2.10 - 2.25 metres it was considerably smaller than the circular building in Level 1c at Hassuna. Complexes of rectangular rooms and a number of kilns with associated kiln wasters were also excavated in Level 12 (Merpert, Munchaev and Bader, 1976, 31). Plans are not available for these early levels, but in Levels 9 and 10 several sets of parallel walls like the suggested drying racks in Level IV at Umm Dabaghiyah were noted, perhaps here the foundations for raised granaries (Merpert, Munchaev and Bader, 1976, 30; 1977, 68). One such

structure of Level 9 covered an area of 4 x 3 metres and included at least 7 parallel walls, .20 - .25 metre wide, .15 metre apart and .22 metre high, with traces of reed matting on some upper surfaces. Intra-mural burials were found, sometimes disarticulated and incomplete.

According to the excavators, the buildings of Levels 7 - 12 are smaller and simpler than those of later levels, with thinner walls and less use of plaster, although gypsum is sometimes used for flooring (Merpert and Munchaev, 1973a, 101). In Level 7 a large building with 8 rectangular rooms was excavated; some of the rooms contained ordinary household pottery and implements, but there were no ovens or hearths and in the central room, which was clear of objects, there were two deposits of human bones, most in a small cavity below the floor and the rest lying on the floor in the south-west part of the room. Some of the bones were in articulation, indicating that the corpse had been dismembered at the limb joints. Merpert and Munchaev suggested that this building had some special function, since flexed inhumation was the usual rite at Yarim Tepe 1 and a similar structure to the north contained an oven and domestic debris (1973b, 5), but there is a parallel for the burial in the Level IV house at Hassuna, and the evidence is inconclusive. The same level also produced the circular house Complex 20, the first circular building to be excavated with a rectangular annexe. Complex 20 contained a hearth and internal partitions; it may have been connected with a number of kilns, including a two-stage pottery kiln, in the adjoining area to the east

(Merpert, Munchaev and Bader, 1976, 27).

Plans are available for Levels 6 - 4. Walls were of tauf, .45 - .50 metre thick, in the form of compact clay blocks which in some buildings were uniform in size and laid in a discernible pattern (Merpert and Munchaev, 1973a, 99). In some walls of Level 5 layers of reeds were found interspersed between the layers of tauf. Floors were generally of hard-packed earth with patches of ash and charcoal, but floors and walls were sometimes plastered and in one case plaster was laid over a layer of matting which rested on a bed of small stones and sherds, rather like the flooring found at Jarmo. High door sills surfaced with large sherds were a standard feature of the houses. Old walls were levelled off and packed firm before new walls were built; the original houses of each level were regularly spaced and the centre of the settlement tended to remain open throughout the life of the village, but the growth of the population and consequent alterations and additions to the plans gradually obliterated the open spaces of the settlement, until a comprehensive re-planning became necessary. Several long and substantial walls crossing the settlement of Level 6 may have been the borders of family compounds enclosing several individual house units (Merpert, Munchaev and Bader, 1977, 67).

The plan of part of Level 6 (fig. 98), in which Samarran pottery appears for the first time, shows two units. The southern unit, in squares 37 - 47, was surrounded by storage;

at the south end of the house were two large rooms, one of which contained a vaulted oven with a stoke-hole opening through the wall into the next room. North of these rooms were further living quarters with an accumulation of grinding-stones, pestles, storage jar sherds and animal bones, and to the north and west were storage structures consisting of rounded plaster cells probably intended to hold containers for foodstuffs (Merpert and Munchaev, 1973a, 99). The northern house, in squares 27 - 37, is very like the houses of Level 7 at Tell Sotto in both size and plan, including such features as internal buttresses. The middle room contained two rectangular plastered surfaces, one of which was surrounded by a clay kerb and sunk slightly below floor level; like the depressions at Umm Dabaghiyah, these may have been for food preparation. The northern room contained an oven. This house was altered slightly in the course of its existence and its floor was raised repeatedly to keep pace with the accumulation of household debris outside.

In Level 5 the central area of the mound, squares 36, 46 and 56, was again left open, but the rest of the excavated area was occupied by densely-packed, multi-roomed buildings (Merpert, Munchaev and Bader, 1976, 25; fig. 99). As originally constructed, the buildings of this level were regularly orientated with their long axes parallel, but as the houses were enlarged the settlement became congested and the gypsum-plastered passages and courtyards between buildings were gradually encroached upon. Complex 1 on the north of the plan strongly resembles the storage blocks at Umm Dabaghiyah,

with two rows of cells measuring c. 2.4 x 2 metres, only one of which, on the south-east, had a doorway. Merpert and Munchaev identify this as a communal storehouse (1973a, 98). The series of parallel walls which makes up Complex VI may have formed the foundation for a grain store which seems to have been attached to the house in squares 37 - 47; it will be remembered that the house in this area in Level 6 was lavishly equipped with storage space. Several of the remaining buildings of this level were damaged by later pits or so much altered that the plan became impossibly confused, but it can be seen that the typical house consisted of two living-rooms (about 3.5 x 2.5 metres in area) and a number of doorless storage rooms (about 2 x 1.5 metres in area). In most cases the living-room next to the courtyard or street seems to have been the kitchen, containing a tannur and a mortar plastered into place on the floor. Several houses contained infant burials.

In Level 4 the damage from later pits was even more extensive (fig. 100), but the level is remarkable for the large number of kilns occupying the excavated area and for the circular building in squares 47 - 37 (Merpert and Munchaev, 1973a, 96). At least 13 large domed kilns, some over 2 metres in diameter, were found although not all had been in simultaneous use. Kiln-wasters and ash-filled pits were found nearby. It is interesting that, as in Level 7, a circular building was apparently associated with the production of pottery, although with a diameter of c. 10 metres the Level 4 building is much larger than earlier examples.

The co-existence of circular and rectilinear buildings and the use of regularly-spaced internal buttresses are features which occur at both Tell Hassuna and Yarim Tepe I, but in other respects the architecture at Yarim Tepe I has more in common with that of the 'proto-Hassuna' sites in the Sinjar plain, with a storage block like those at Umm Dabaghiyah and long, rectangular houses divided by internal buttresses and provided with doorless storage cells like those at Tell Sotto. Future excavation of Hassuna sites in other areas may determine which of these features belong to a local tradition of architecture in the Sinjar plain and which are characteristic of the Hassuna culture as a whole.

As we have seen, Samarran pottery appears on Hassuna sites and there is clearly a considerable overlap between the two cultures; the Samarra culture seems to have spanned a period from some time before the beginning of the sixth millennium B.C. until its end. There is also an overlap with the Halaf culture. Unlike the Hassuna settlements, the distribution of Samarran sites extends well south of the zone of rain-fed agriculture. Excavated Samarran sites include Tell Shemshara, now flooded by the Dokan dam, which seems to have belonged to a northern architectural tradition; no complete house plans were recovered, but boulders were used as foundations for walls of tauf (Mortensen, 1970, 18). At Matarrah, south of Kirkuk, it is tempting to suggest that the architecture represents a transition between the two cultures. The houses were of tauf and resemble those of the earlier levels of Hassuna in size and irregularity (Braid-

wood et al., 1952, 1; fig. 101), although the house on the west of the first floor (upper part of fig. 101) is more orderly in plan, with two larger rooms in the centre flanked by narrower ranges on either side.

It is difficult to trace any relationship between the architectural remains at Tell Shemshara and Matarrah and the houses excavated at the two Samarran sites in the south, Choga Mami and Tell es-Sawwan. At Choga Mami the buildings were not of tauf but of cigar-shaped mud bricks .60 - .90 metre long and .12 - .18 metre in diameter, laid in alternate courses of headers and stretchers with massive buttresses at corners and opposite interior wall junctions (Oates, 1969, 115). Of the three houses shown in fig. 102, the O11 - 12 house of Level III is probably the earliest, but the plans are very similar, consisting of several rows of small rooms (about 2 x 1.5 metres) with a regular buttressed outline. The open passage between the O11 - 12 house and the one to the north was replastered at least three times with gypsum plaster, and the gypsum flooring in some rooms was carried up the walls as a protection against damp. On the lower floor of Room 7 in the O11 - 12 house there was an infant burial in an incised jar. Room 51 of the H9 house was unusual; there were three large plastered orthostats (originally four) in the corners, and when the floor plaster was removed it was found that there was a burnt area in front of each orthostat and contemporary with its installation. The houses contained pottery, flint tools, a range of grinding-stones, querns and mortars, stone pendants, studs

and toggles, clay figurine fragments, beads, studs, sling bullets, spindle whorls and loom weights and various bone tools. The pottery was predominantly Samarran, but in later levels was transitional between the Samarran and 'Ubaid styles; Halaf pottery from a well in square J6 post-dates the latest Transitional wares, indicating that there was a gap between the latest Samarran occupation in this area and the latest phase of the Halaf sequence in the north (Oates, 1969, 121).

Substantial buttressed walls which were not part of any structure, like those of Level 6 at Yarim Tepe 1, were excavated at Choga Mami, suggesting that house units were clustered within larger compounds. Houses were founded on top of or within the walls of their predecessors, perhaps in adherence to established property rights, although the re-use of earlier walls as foundations may equally well be attributable to structural convenience. The plant remains indicate that irrigation was being practised (Helbaek, 1972, 35), and it is possible that a society in which some control over the allocation of water had to be exercised would have had a more developed sense of property than existed among the cultures of the rain-fed north.

Irrigation was also practised at the Samarran site of Tell es-Sawwan (Helbaek, 1964, 47), which lies far to the south of the 200 mm. reliable annual rainfall isohyet, although the small size of the cereal grains makes it seem unlikely that any very sophisticated system of water regulation was in operation. Mould-made mud bricks were used from the

earliest levels and walls were plastered on both faces with buttresses at corners and opposite internal wall junctions, as at Choga Mami. A further similarity between Sawwan and Choga Mami was the use, from Level II onwards, of gypsum floor-plaster, sometimes carried up the walls and in one case laid over bitumen-coated mud plaster, suggesting that rising damp was a problem (El-Wailly and Abu es-Soof, 1965, 21).

No overall plans exist of Levels I and II although it is known that the settlement of Level I was enclosed by a V-sectioned ditch. Several large buildings were excavated which the excavators interpreted as mortuary structures on account of the large number of burials (over 130 in Building 1 of Level I), accompanied by alabaster grave-goods, which were found beneath their floors (Al-A'dami, 1968, 59; El-Wailly and Abu es-Soof, 1965, 19; Abu es-Soof, 1968, 3). The buildings were said to contain no ovens, hearths or domestic implements, and they differed in size and plan from the houses of Level III. On the other hand, as Oates has pointed out (1978, 117), there is no other type of building in the settlement of these levels, and infant burials, albeit in smaller numbers, were found beneath the floors of houses in Level III.

There were a number of unusual features in the plans of the buildings of Levels I and II, notably the size of the buildings and of the individual rooms within them (see Table 2). Doors are often situated in the centre of the wall instead of towards one corner, preferably of a long

wall, as is more usual in Mesopotamian houses. Several of the Sawwan buildings have long ranges of rooms in which the doorways face each other; in Building 1 of Level I (which was re-used in Level II) one such row of facing doorways ended in a niche in the north-east wall. A similar arrangement, though without the niche, may be seen in Building 2 of Level I (fig. 103). The remaining buildings were not so well-preserved; Building 2 of Level I was replaced in Level II by an irregular structure whose vaguely T-shaped outline foreshadows the houses of Level IIIA. The more regular buildings of Levels I and II, each of which has two ranges of rooms on either side of a wide central area divided into two or three parts, bear some resemblance to the tripartite 'Ubaid houses with stepped outline discussed in Chapter 4 (see figs. 115 - 118); the resemblance is particularly marked in the case of Building 3 of Level I (Al-A'dami, 1968, Plan No. 3), which has two sets of similar rooms, including a group of long narrow rooms, on either side of the central space.

In view of the fact that Level IIIA at Tell es-Sawwan sees a drastic remodelling of the settlement, it is difficult to establish any direct link between these early Samarran buildings and the later 'Ubaid ones. In Level IIIA a massive buttressed wall was constructed on the inner edge of the ditch around the perimeter of the mound; at a later stage it was plastered with gypsum. Within the wall eight more or less complete buildings and fragments of three or four others were excavated. The eight complete buildings were essentially

the same in plan, free-standing and, like other Samarran buildings, orientated with their corners to the cardinal points, the beginning of a long tradition in Mesopotamian architecture. Each building is T-shaped in outline, and although each has a slightly different arrangement of rooms, certain features are common to all. In each, the cross-bar of the T is occupied by a square room with a small rectangular room behind and a varying number of long, narrow rooms alongside it. Except in Building No. 2, the upright of the T is formed by another square room, usually larger than the one in the cross-bar, a small rectangular room and three small rooms. The consistency of this arrangement suggests that each part of the house had a highly specialised function; the construction of the houses also displays considerable regularity, with symmetrically-ordered buttresses at corners, opposite interior wall junctions, and on longer expanses of wall. Doorways in most of the larger rooms were towards one corner, and impressions of a wooden lintel were found in Building 10 only .90 metre above the floor (Yasin, 1970, 4). Room 394 of Building 6 was juss-paved and contained a large number of querns, indicating that food preparation took place there. It is possible that the square rooms in the uprights were open courtyards, but the buttresses on the walls of Buildings 6, 8, 10 and 13 may have been intended to support beams and strengthen the walls against the thrust of a roof; equally, their positioning may be attributable to the well-marked Samarran penchant for symmetry. There were a few intra-mural burials of both adults and infants, but they were no longer accompanied by alabaster objects and

there must have been a cemetery outside the settlement. Most of the Level IIIA houses were less than half the size of the buildings of preceding levels (see Table 2), implying that the community had divided into smaller units; one may speculate whether this development was connected with the need to construct defences.

Ovens and storage silos of gypsum were situated in the open spaces between buildings, or in structures like Building 11 near the north-west gate which may have had some communal function such as that of watch-tower; there were two gypsum staircases which presumably led to the flat roof (Abu es-Soof, 1971, 4). Several of the lanes between the houses were pebble-paved, and the open areas of the settlement were probably used as animal pens. In the following level, IIIB, many of the rooms of the IIIA houses were subdivided with thin gypsum partitions (the use of gypsum is particularly widespread in this level), apparently to form the walls of grain bins, and it was suggested that most of the buildings were re-used as granaries (Abu es-Soof, 1968, 5; Yasin, 1970, 4), although since the 'granaries' produced querns, pestles, hoes, sickle blades, sling bullets and pottery it is possible that the houses of IIIA had simply been adapted in IIIB to fit slightly different domestic requirements (Abu es-Soof, 1971, 4). The T-shaped house form appeared for the last time in late Level IIIB or early IV when Building 12 was constructed, cutting the enclosure wall and ditch (Al-A'dami, 1968, Plan 1). The building was ruined to foundation level but had apparently had a different

lay-out from the IIIA buildings; one of its most interesting features was the presence in Room 262 of a pair of light doors of woven reeds coated with bitumen, like those in the chapel at No. 1 Paternoster Row in the Larsa period house quarter at Ur (see Chapter 6).

The remaining levels of Tell es-Sawwan were much eroded, but it is interesting that the stone foundations of a Halaf tholos 12 metres in diameter with a rectangular antechamber were found on the west side of Mound B above the remains of Level III, probably dating to a period when the site had been abandoned by its Samarran occupants.

The distribution of Halaf sites in northern Mesopotamia indicates that the economy was dependent on rain-fed agriculture, in which cattle probably played an important part since the ox-head is such a popular motif on Halaf pottery. During the period of its existence in the late sixth and throughout much of the fifth millennium B.C. it overlapped with the Hassuna and Samarra cultures, but its distinctive pottery achieved a much wider distribution than that of its two contemporaries, reaching Syria and Anatolia. Neutron activation analysis of Halaf sherds indicates that some sites, such as Chagar Bazar in the Khabur region or Tell Arpachiyah near Mosul were centres of pottery production and trade (Davidson and McKerrell, 1976; 1980), and its presence at sites over this wide area does not necessarily

indicate that the occupants belonged to a single cultural or ethnic group.

The origins of the Halaf culture are obscure, although the presence of circular buildings at Hassuna and Yarim Tepe I may be evidence that Halaf elements were present in northern Mesopotamia and co-existing with the Hassuna culture from an early period. The circular 'tholos', sometimes with a rectangular antechamber, is the most distinctive feature of Halaf architecture, although rectilinear buildings were also constructed. The first phase of settlement at Arpachiyah consisted of rectangular houses built close together, but in the second phase a change took place and circular houses were built within a residential enclosure. There are indications that Arpachiyah may have functioned as a craft centre for nearby Nineveh, and recent work at the site seems to confirm its special status (Mallowan and Rose, 1935, 17; Hijara, 1980, 131). The settlement of the second phase consisted of a working area and a special residential precinct surrounded by an enclosure wall; the precinct was kept relatively clear of household debris and two graves were dug outside the tholoi. There were no longer any permanent dwellings in the outer area. The walls of the early tholoi were of tauf .30 - .35 metre thick; floors were gypsum-plastered and one gypsum-plastered wall bore traces of paint, but there were no stone foundations. In Mallowan's levels T.T. 10 - 7, which succeeded these early phases, stone foundations began to appear, rectangular antechambers were added and the tholoi became larger. The foundations were undisturbed

by successive rebuildings, and occasional burials were associated with the tholoi, although most of the population must have been buried in a cemetery elsewhere. Tauf continued to be used for walling, and in one tholos part of the springing of the dome remained; a Halaf tholos at Tell Aqab in the Khabur region was also roofed in this way, as are some modern houses in the area (Davidson and Watkins, 1981, 5; see fig. 17). The roofing of the antechamber is problematical; it may have been pitched, as Mallowan suggested (Mallowan and Rose, 1935, 30), flat or perhaps slightly cambered, like the north Syrian houses in fig. 34. In the later levels the inhabitants of Arpachiyah built stone pathways over 1.2 metres wide of pebbles packed hard over a layer of potsherds for drainage.

In T.T. 6 (fig. 105) the site returned to rectilinear architecture and the centre of the mound was occupied by a large, multi-roomed building which had been destroyed by fire. The extraordinary profusion of objects found in it indicates that it was the workshop of a potter and stoneworker; polychrome pottery, stone vases, beads, figurines, amulets and flint and obsidian tools were found, many objects lying close to the walls as if on shelves. The neutron activation analysis of pottery from Tell Arpachiyah and Tepe Gawra indicates that certain types of vessel were traded from Arpachiyah to Tepe Gawra (Davidson and McKerrell, 1981, 163). At both sites, the Halaf culture was succeeded by the 'Ubaid, but at Gawra the transition was gradual in architecture as in pottery (see Chapter 4), while at Arpachiyah

the change in pottery styles was abrupt, despite the fact that the adoption of rectilinear architecture and the abandonment of the tholos seem to have taken place well before the end of the Halaf.

At the Halaf site of Yarim Tepe II eight occupation levels have so far been investigated and there are indications that circular houses were present from the beginning of the settlement, as they were sporadically throughout the life of nearby Yarim Tepe I (Merpert, Munchaev and Bader, 1978, 36). In the earlier levels walls were of tauf, .30 - .35 metre thick and mud or gypsum-plastered; no plans have yet been published, but rectilinear buildings were excavated as well as tholoi with and without rectangular annexes. There was no sign at Yarim Tepe II of the periodic replannings which characterised Yarim Tepe I. A few burials were found near the houses and storage structures of these levels, but most of the burials of the Halaf settlement seem to have been deposited in the mound formed by the Hassuna settlement at Yarim Tepe I.

Fig. 106 shows part of the plan of Level VI. There was a large unit of over 20 small, rectangular rooms in squares 18 and 19, with the circular building 31 in the centre (Merpert and Munchaev, 1973b, 12). The walls of the circular structure were unusually thick, .60 - .70 metre; its internal diameter was only 2.60 metres and it was partitioned into small bins which were probably used for storage. The rectangular rooms surrounding it contained little in the way of

pottery or animal bones and the excavators suggested that they, too, were used for storage, perhaps of a communal nature. On examination of the plan, the south-east and south-west parts of the unit resemble the Hassuna houses of Yarim Tepe I in plan and dimensions, with long, rectangular rooms divided by internal buttresses and small, doorless storage cells. The absence of household debris is paralleled in the residential precinct at Arpachiyah, which was also kept relatively clean.

A rectangular one-roomed building with buttressed tauf walls about 4.4 x 2.2 metres was found near the present edge of the mound in Level VI; since it contained a small oven and a horse-shoe shaped hearth it was presumably a house (Merpert, Munchaev and Bader, 1976, 51). The best-preserved dwelling of Level VI was, however, Tholos 42, whose gypsum-plastered tauf walls decreased in diameter as they grew higher, indicating that the building had been domed. There was a clay hearth on the east side of the building and a rectangular antechamber on the south as well as rectangular annexes to the west; finds included flint and obsidian implements, sling bullets, a quern fragment, animal bones and coarse and painted Halaf wares. The rectangular structure No. 203 produced pieces of clay plaster with the imprint of poles which had formed part of the flat roof, but since it was only 1 metre high the building was probably for storage rather than residential purposes. A number of clay ovens and pottery kilns were excavated in this level; the latter were c. 1 metre in diameter and divided into furnace and combustion chamber

by pierced clay sole plates. One specially-constructed oven near the north edge of tholos 42 had been used to carry out a cremation, which was accompanied by several deliberately broken clay and stone vessels and other grave goods (Merpert, Munchaev and Bader, 1976, 51); a second cremation at Yarim Tepe II was also accompanied by deliberately broken vessels, evidence of ritual burial practices in a culture where the normal rite was inhumation.

The circular house 22 of Level V was constructed in the same area as the slightly smaller tholos 17 of Level VI (fig. 107); it was surrounded by a number of small rectangular structures, probably once again for storage. Circular structures were also used for non-residential purposes, for example the small tholos 27, which sheltered an oven, or tholos 37, which surrounded a cylindrical storage pit (Merpert and Munchaev, 1973b, 10). In the same level, the rectilinear structure No. 164, with one room measuring 3.20 x 1.95 metres, was apparently in use as a dwelling. Near building 164 was the first structure of mud bricks to be excavated at Yarim Tepe II; the bricks measured .23 - .25 x .14 - .16 x .07 - .09 metres.

In subsequent levels circular and rectilinear buildings continued to co-exist, but the tholos appears to have been the basic house type. One rectangular building excavated in Level IV was kept free of occupation debris and the excavators suggested that it was a public building, although it appears to have had no other peculiar features (Merpert

and Munchaev, 1973a, 109). Mud brick, often reinforced by buttresses, was used more frequently and some walls were covered with thin red-painted bitumen plaster, but the remains of the last three levels were fragmentary.

At Tepe Gawra the earliest level reached, Stratum XX, which produced only Halaf pottery, also produced a circular building which may have been part of a larger complex (Tobler, 1950, 147). The following two strata were dominated by large, rectangular-roomed houses which presumably reflected the increasing 'Ubaid influence at the site, and tholoi appeared for the last time in Stratum XVII (fig. 112; see Chapter 4), surrounded by a settlement of rectilinear dwellings.

Although the domestic architecture of each site is slightly different, the links between sites of the same culture or between sites of different cultures in the same area are sufficiently strong to indicate that there was considerable continuity and some intermingling in domestic architecture. This is particularly clear in the Sinjar plain sites, where features such as the doorless storage room and the long, rectangular living-room divided by internal buttresses persist from the 'proto-Hassuna' into the Hassuna culture and are also found alongside the characteristic circular dwellings of the Halaf. Future excavation may disclose whether these traits were widespread or whether this was a regional tradition. It is particularly difficult to define what is implied by the term 'culture' with reference to the widely-distributed Halaf assemblage, and the architecture of

Level VI at Yarim Tepe II reminds us that, while the introduction of new pottery styles may have been connected with the arrival of new ethnic groups (a process which may have occurred over a long period of time, if the circular buildings on Hassuna sites are significant of differences within the population), there is little or no evidence that this was a violent process, involving the complete destruction of the former inhabitants of the area and their way of life. The upper Khabur region described in the preceding chapter provides a model, though not necessarily an exact one, for the sort of ethnic mixture which may have prevailed in prehistoric Mesopotamia, with new groups adopting some features of the pre-existing material culture of the area while retaining some distinctive features of their own.

The architecture of the two southern Samarran sites is not identical, but as with the other cultures there are enough points in common to indicate a single architectural tradition. The use of mould-made mud bricks, regularly-placed buttresses and symmetrically arranged plans are evidence that their builders shared a canon of proportions and a repertoire of building techniques. The similarity between the buildings of Levels I and II at Tell es-Sawwan and those of the 'Ubaid period at Tepe Gawra, Telul eth-Thalathat and Tell Madhhur has already been pointed out, but in the present state of knowledge it is impossible to bridge the gap between these two highly ordered architectural traditions when the early 'Ubaid levels at Tepe Gawra were occupied by irregular, multi-roomed dwellings.

Attempts to reconstruct prehistoric social organisation are no more than speculation. On grounds of size alone, it seems impossible that most prehistoric houses can have housed more than one nuclear family. On the other hand, it is difficult for 20th-century western Europeans to believe that anyone at all can have lived in dwellings as small as those of, for example, Levels III and IV at Umm Dabaghiyah. It is almost impossible to exclude one's own cultural definition of the nature and requirements of a house. The climate even in northern Mesopotamia is such that it is preferable to sleep outside for most of the year; most activities probably took place in the open air, and the small, low-ceilinged houses were used primarily for storage and food preparation and were resorted to for shelter only in the most extreme weather. The account by Banks (1912) of the conditions endured by the workmen and their families at Bismya, with only the flimsiest shelters for protection, is a warning against applying our own standards of what is tolerable.

Given that prehistoric houses in Mesopotamia functioned in ways which are not only foreign to us but seem to have differed as widely from the domestic architecture of the area today, it is difficult to arrive at any estimate of their numbers of inhabitants or to do more than guess at their social structures. As we have seen, there are signs at Umm Dabaghiyah, Yarim Tepe I and Choga Mami that several small houses might be part of a larger unit, but there is no direct evidence that the relationship was one of family. At Arpachiyah and Tell es-Sawwan all the houses of one phase

were enclosed by a wall, although at Arpachiyah the enclosure does not seem to have been defensive. The amount of storage space belonging to each house might be a good indication of the numbers of its occupants, but as Level 7 at Tell Sotto showed, it is not always easy to determine which storage structures belong to a particular house, or even whether they are not, in fact, residential. Several prehistoric sites have structures which might be 'communal' in that they were used by the inhabitants of several house units, like the storage blocks at Umm Dabaghiyah or the ovens at Tell es-Sawwan, but the presence of individual storage facilities and the practice of rebuilding within old plots indicates that private property rights were already developed. Perhaps the most revealing site plan is that of Level IIIA at Tell es-Sawwan, whose highly organised aspect is in sharp contrast to the relatively unplanned Halaf settlements. It is difficult not to see some connection between the orderly Samarran architecture and the development of irrigation agriculture, and tempting to hypothesise that it is ancestral to the later architecture of southern Mesopotamia, but in the virtual absence of house plans from the south in the 'Ubaid and Uruk periods this remains no more than a guess.

TABLE 2: EARLY PREHISTORIC HOUSE AREAS

Umm Dabaghiyah:		
Level IV	House on west	18 metres^2
	Central Houses - eastern house	13 metres^2
	Central Houses - middle house	20 metres^2
	Central Houses - western house	10 metres^2
Level III	Central Houses - eastern house	15 metres^2
	Central Houses - middle house	19 metres^2
	Central Houses - western house	10 metres^2
	South-western houses - 1	32 metres^2
	South-western houses - 2	39 metres^2
	South-western houses - 3	22 metres^2
	South-western houses - 4	12 metres^2
Level II	North-west house	82 metres^2
	South-west house	39 metres^2
Tell Sotto:		
Level 7		23 metres^2
Telul eth-Thalathat:		
Tell 2, Level XV		22 metres^2
Tell Hassuna:		
Level Ic	Northern house	32 metres^2
	Southern house	31 metres^2
	Circular house	20 metres^2
Level II	Southern house	52 metres^2
Level III	Rooms 6, 7, 10 + 14 (incomplete)	65 metres^2
Level IV	Rooms 1-6 and 15	54 metres^2
Level V	Rooms 6-10, 13-16 and 25	77 metres^2

Table 2: Early Prehistoric House Areas (cont.)

Yarim Tepe 1:		
Level 7	Complex 20	12 metres^2
Level 6	Southern house	57 metres^2
	Northern house	24 metres^2
Level 5	House II	86 metres^2
	House III	27 metres^2
	House IV	45 metres^2
	House V	37 metres^2
	House X	57 metres^2
	House XI	29 metres^2
Level 4	House in Sqs. 48-58	39 metres^2
Matarrah:		
Operation IX	2nd floor	25 metres^2
	1st floor, Western house	29 metres^2
Choga Mami:	O11-12 house	57 metres^2
	H8 house	36 metres^2
	H9 house	32 metres^2
Tell es-Sawwan:		
Level I	Building 3	170 metres^2
Level II	Building 2	188 metres^2
Level IIIA	Building 2	87 metres^2
	Building 4	73 metres^2
	Building 6	53 metres^2
	Building 7	61 metres^2
	Building 8	67 metres^2
	Building 10	87 metres^2
	Building 13	74 metres^2
Level IV	Building 12	103 metres^2

Table 2: Early Prehistoric House Areas (cont.)

Tell Arpachiyah:		
T.T.10	Tholoi in centre	22 metres^2
	Tholos in FcV_1	16 metres^2
T.T.9	Central tholos	24 metres^2
	Tholos in $FdIV_5$	15 metres^2
T.T.8	Central tholos	85 metres^2
	Tholos in FdV_2	36 metres^2
T.T.7	N. Central tholos	85 metres^2
	S. Central tholos	66 metres^2
T.T.6	House/workshop (incomplete)	c. 200 metres^2
Yarim Tepe II:		
Level VIII	Tholos 56	17 metres^2
Level VI	South-eastern unit	c. 21 metres^2
	South-western unit	c. 24 metres^2
	Tholos 42	c. 14 metres^2
Level V	Tholos 22	21 metres^2
Level IV	Tholos 5	13 metres^2
	Tholos 7	16 metres^2

CHAPTER 4

Later Prehistory: the 'Ubaid and Uruk periods.

For each stage in the history of domestic architecture in Mesopotamia there tends to be only one site with a sizeable area of well-excavated and fully-published housing, while from other sites of the period there are only fragments and isolated buildings. This problem is particularly acute in the later prehistoric periods, when the southern alluvium is barely represented and even in the north the evidence is meagre (see fig. 108). There are a number of reasons for this; not only have excavators concentrated on more spectacular buildings, especially temples, but the early residential areas of the great cities are buried under vast accumulations of later material and would therefore be extremely expensive to excavate. Conversely, the smaller sites of early villages will often be buried under the alluvium. The lack of comparative data for periods which must have been crucial in the development of southern Mesopotamian civilization is extremely frustrating.

The 'Ubaid.

Earlier writers envisaged 'Ubaid settlers moving south to become the first inhabitants of southern Mesopotamia, a land that was, in Woolley's words, 'still marsh dense with reeds and opening out here and there into lagoons....through which the slow river made its way to the sea' (1955, 11), and in which the colonists had to found their villages on

artificial platforms. Current opinion on the ancient level of the Gulf no longer requires us to see the people of the 'Ubaid culture as the first occupants of the area (see Chapter 1), and although the environment of Ur has changed drastically patches of marshland were and are an important feature of the Mesopotamian landscape, so that it is not surprising if reeds are found in use as a building material in early 'Ubaid levels. It is interesting that there is still an area of marshland near Warka, another site where, as at Ur, marshy conditions and reed houses were detected in the earliest levels. It would be surprising if the rich environment of the marshes had remained unexploited before the 'Ubaid period, however impossible it may be to detect that exploitation. It would be equally surprising if the people of the 'Ubaid culture had ceased to exploit the available resources merely because of the introduction of a few new techniques such as agriculture and the manufacture of pottery.

Today, although the characteristic Marshes house of reed arches covered with reed matting is confined to the far south, the building materials of the marshes, particularly reed and palm frond matting, are found all over the country. A mixed architecture, in which walls of tauf or mud brick are covered with a roof consisting of arches of reed bundles kept rigid by horizontal ties of palm frond ribs and covered with tightly-lashed matting, is used as far north as Baghdad. According to Nissen (1968, 107) such a roof is more watertight than one might suppose and indeed conventional flat roofs of mud often leak all too freely.

The 'Hut Sounding' at Eridu provides an example of this co-existence of materials: a solid mud brick building was adjoined by a number of rooms built out of reeds plastered on both sides with clay. These rooms seem to have formed a kitchen annexe; there were two low ash-covered platforms which were probably hearths, an oven, and a shallow basin which may have been used for storing grain, in addition to the usual range of domestic equipment such as pottery and net-weights (Safar, 1950, 30).

At Tell al-'Ubaid itself the houses, of which unfortunately no plans exist, were said to have been constructed of reed matting plastered on both sides, occasionally with bitumen, perhaps on a timber framework. Carbonised fragments of timber and brushwood found in the huts may have formed part of the roofing, and stone door-sockets indicate the use of fairly substantial doors (Hall and Woolley, 1927, 57). The hearth of mud bricks mentioned in the original report was later identified by Woolley as being intrusive, but in the early 'Ubaid levels at Ur itself mud brick was found in use alongside houses of mud-plastered reed matting lashed to uprights formed by bundles of reeds (Woolley, 1955, 10 and Note 3).

The small early site of Ras al-'Amiya (Hajji Mohammed - Eridu 3), five miles north of Kish, was discovered accidentally in the course of cutting drainage ditches, the top of the tell being some distance below the present surface. Throughout the five short-lived building levels, which prob-

ably occupied no more than 100 years, tauf was the building material used, although there was a short stretch of mud brick walling in Level 11 (Stronach, 1961, 95). Since only a nârrow trench was excavated, nothing is known of the overall planning of the settlement beyond the fact that the houses were closely packed, with small irregularly-shaped rooms (not more than 2 x 2 metres and often much less) around courtyards in which ovens were situated and household rubbish dumped (fig. 109). Only one or two fragments of wall-plaster were noted, and floors were of beaten earth; quantities of bitumen-impregnated chaff found in various rooms of Level 111 may have been used for repairing leaky roofs. A number of small doorless rooms are reminiscent of the Hassuna and Halaf sites of the north, and the use of stone to bolster a Level 111 foundation also indicates northern connections, although in the absence of comparative material it would be rash to attribute the site to any particular building tradition. The usual assortment of pottery, bone and stone implements was found, although the characteristic 'Ubaid sickle of baked clay was missing.

Ras al-'Amiya was presumably a small village, so it is not surprising to find a rather different state of affairs at Tell 'Uqair, which had developed into a sufficiently important town to boast a large public building of some sort, with thick if rather crudely-built walls (Lloyd and Safar, 1943, 131). Across a well-defined street from this public building was a private house, described as 'somewhat impoverished', with walls only one brick thick and mud

floors which bore traces of reed matting. The complete plan was not recovered, but the five existing rooms are of moderate dimensions, the largest being about 2.70 x 2.5 metrès, and the total area of the house as at present known is over 20 metres^2 (it should be stressed that because the scales of most published house plans are both small and eccentric, all measurements are approximate).

The remaining shred of evidence for the 'Ubaid house in the alluvium comes from the unexcavated site of Raidau Sharqi, near Warka, where a German team planned the outline of some houses made visible on the surface by differences in soil moisture and dated to the 'Ubaid by surface sherds (Heinrich and Falkenstein, 1938, 31; fig. 110). The plan that emerges is of course lacking in detail but of considerable interest nevertheless. The settlement consisted of a number of large compounds or walled courtyards containing one (Nos. 4, 9 and 10) or more (e.g. No. 11) huts of tauf or mud brick. Some of the huts had clay floors, and in No. 2 a sunken storage jar was found. The enclosure walls of the various compounds were close together, so that some were reached by winding alleys (e.g. No. 10). The building No. 15 in the south-east of the settlement had an interesting plan; it measured 11.60 x c. 6.8 metres and had a projection in each of its three preserved sides, an arrangement reminiscent of the temples at Eridu and elsewhere.

Raidau Sharqi is of interest because it closely resembles the modern villages of the area, where the basic

house form is the walled compound containing at least one mud brick room, more rooms being added as the need arises. The compound provides accommodation for the members of an extended family group whose basic means of subsistence is derived from farming the family's land, and also provides storage for grain and other food crops and overnight shelter for animals. The almost entirely self-sufficient compound house is today the basic economic unit of the countryside, and the somewhat ambiguous evidence of Raidau Sharqi suggests that it may have had a very long history in this area. It is of course confined to villages; one would hardly expect to find it in the larger settlements which usually attract the attention of archaeologists, where population pressure and a more complex economic structure could be expected to produce a more compact house form, as at Tell 'Uqair.

In the north of Mesopotamia evidence is slightly more plentiful; the long sequence at Tepe Gawra is supplemented by material from other sites such as Telul eth-Thalathat and Tell Madhhur. In the earliest 'Ubaid levels at Tepe Gawra the overlap between the Halaf and 'Ubaid traditions which is visible in the pottery is also reflected in the architecture. In the lowest levels of the tell only a small area could be excavated, but this was enough to reveal in Stratum XlX, the first 'Ubaid level, one large house complex, part at least of another, and a temple (Tobler, 1950, 45; fig. lll). The large complete house complex consists of rooms 36 to 51, plus rooms 32 to 35; although the latter

group seems to have communicated with the open space 31 to the south-east its walls were bonded into the rest of the building and on the same level. With these rooms, the complex would have had an overall floor area of about 150 metres^2; the area of rooms 36, 40 and 51 was probably open to the sky. It is worth pointing out that the rooms in this complex are quite sizeable compared with those in earlier prehistoric dwellings: 3.4 x 1.6 metres for room 43, for example, or 4.6 x 2.5 metres for room 45.

Between this house and the temple ran a broad open space or street, with another street turning off from it towards the temple entrance. Opposite the temple was a smaller, irregularly-shaped house consisting of four rooms (7 and 16 - 18), about 25 metres^2 in area. The small right-angled building formed by rooms 21 and 23 across street 20 looks almost as if it were guarding the entrance to the open space 31 on the south-eastern side of which lay the southern half of what may have been a second large complex.

Stratum XVlll contains another temple similar to that in Stratum XlX, but the house remains are too fragmentary to be worthy of comment. In Stratum XVll tholoi reappear for the first time since Stratum XX, the last purely Halaf level (Tobler, 1950, 42); two appear in the southern half of the excavation (fig. 112). The excavators interpreted these circular buildings as having a religious function, both because of their association with numbers of unfurnished graves and their situation in the part of the mound

occupied by the XVlll and XlX temples. There were however many graves beneath the secular structure rooms 23 - 35, and although the tholoi cannot compare in size with the large house complex excavated in the north-western part of the settlement, the recovered dimensions of which were over 13 x 13 metres, they compare quite favourably in area with the small-roomed structures surrounding them; tholos 21 would have had an area of about 13 metres^2 compared with just under 20 metres^2 for the four rooms 6, 7, 13 and 14, which seem to form a unit. It seems most likely that the Tepe Gawra tholoi were secular or domestic structures.

The settlement of Stratum XVll was built on two peaks separated by a central depression, a feature which persists through Stratum XVl into Stratum XV. In Stratum XVl (fig. 113; Tobler, 1950, 40) the eastern peak appears to be residential, the northern industrial or at any rate devoted to storage, with several ranges of parallel walls denoting raised storage units or drying racks of some kind, and a curious building whose long narrow rooms with staggered doorways suggest that it was designed to fulfill some specialised function; it survives into Stratum XV. The small circular structures in this area described as 'kilns' are more probably ovens. On the eastern, residential peak there are some small, irregularly-planned houses, one with a kiln attached (rooms 14 - 24), which the excavators suggested might have been the workshop and residence of a potter. In this case the installation probably was a kiln, since besides being over 2 metres in diameter and thick-walled, it was sunk into the ground

and contained a quantity of fused clay)Tobler, 1950, 41). This house was about 39 metres^2 in area, rather larger than the house consisting of rooms 27 - 31 (which had two infant burials under its floors), which was only c. 28 metres^2. If this seems impossibly small, it may be interesting to compare it with a building from the earliest 'Ubaid level, Stratum 14, of Tell 2 at Telul eth-Thalathat, which was only about 15 metres^2 in area (Fukai, Horiuchi and Matsutani, 1970, 18; fig. 114 and Table 3). The structure consisted of one large (c. 1.65 x 3.90 metres) room and three small ones; the walls were of mud brick, apparently roofed with thatch, since lumps of clay bearing the impressions of reeds on both sides were found. The large room would have been big enough to sleep in, and we have of course seen smaller structures in use in earlier periods; probably the occupants of these 'Ubaid houses still spent most of their lives out of doors, using their houses mainly for storage and food preparation, and resorting to them for shelter only in the most extreme cold weather. Their irregular plans and flimsy construction make it seem unlikely that their areas were increased by a second storey.

Squares G and E 6-7 of Stratum XVl produced a building with an interesting plan, unfortunately incomplete. Its rooms were arranged around a central courtyard; the white-plastered northern wall of room 3 was decorated with a design of red and black diamonds. The excavators suggested that this building was the precursor of the house in the same area in Stratum XV, but even with much of the plan missing one

may point out several differences; the rooms along the northern side, for example, do not communicate with each other and the largest rooms are positioned at the corners rather than in the centre of the wall. In fact, the plan recalls the building No. 15 at Raidau Sharqi, which had similarly projecting corners.

It is in Stratum XV at Tepe Gawra that we encounter for the first time the typical house form of the 'Ubaid in the north, or at any rate the most distinct and recognisable (Tobler, 1950, 37; fig. 115). As before, the settlement is built on two peaks, with storage facilities and ovens or kilns on one and a residential area of four houses on the other - although ovens or kilns and storage racks are also found in this area. Of the four houses, two are small and consist basically of one room, about 14 metres^2 and 20 metres^2 respectively. The other two houses, although they differ in size, closely resemble in plan not only each other but also houses in succeeding levels of Tepe Gawra (Tobler, 1950, 37) and at Telul eth-Thalathat (Tell 2; Egami, 1959, 4 - 5) and Tell Madhhur (unpublished).

The plan of these houses as seen in Stratum XV consists of a long narrow room or courtyard flanked on either side by a row of smaller rooms; the flanking rows are larger than the central area whose short end walls thus form a recess at either end of the building. In addition, the central rooms of the flanking rows tend to be longer than those at the ends, giving the outer wall of the house a stepped outline.

The rooms are not always strictly rectangular, so that even where the houses stand alone, apparently quite free from constraints on space, the plans are often slightly irregular, and as Table 3 shows there is great variation in size. Nevertheless, there are pronounced similarities, not only in outline but in the disposition within the house of individual rooms. Recurring features are the positioning of doorways and niches to face each other across the central space, the symmetrical arrangement of pairs of rooms or room groups of similar sizes on opposite sides of the house, and the presence of a pair of long narrow rooms, or of a room almost divided by a central wall, usually on the opposite side of the house from the entrance. The excavator of Madhhur, Dr. Roaf, has suggested that this arrangement formed the support for a light wooden staircase leading to the roof (personal comment).

The Thalathat and Madhhur houses give us a fairly full picture of the contents and construction of this house type. All are of large rectangular mud bricks, although the Stratum XlV house at Gawra survived mainly in the form of its heavy stone foundations (fig. 116). The walls of the Thalathat house (fig. 117; Egami, 1959, 4 - 5) were only one brick thick, reinforced by the occasional buttress, although the walls on the eastern, downward-sloping side were of heavier construction. Walls were mud-plastered and floors usually of beaten earth or mud plaster, although two rooms of the Thalathat house, including the entrance hall, were partially paved with mud bricks plastered over. There is no trace of

roofing materials in these houses, but evidence from Tell Mefesh in Syria suggests that they were identical to those in use today: fragments of some burnt 'Ubaid houses there produced the remains of poplar beams over 2.5 metres long and oval in section (10 x 7 cm), which had been overlain by reeds (Mallowan, 1946, 126). Willow charcoal was also found to complete the list of materials required for a very widespread form of roof construction in which the room is spanned by poplar beams across which are laid transverse rows of willow poles supporting a layer of reeds, the roof being made (more or less) watertight with several layers of hard-packed mud plaster.

The walls of the Madhhur house (fig. 118) were unusually well-preserved and still stood to a considerable height; the unique discovery of a number of small windows may be attributable to this. Some of the windows opened onto the outside of the house, others onto adjoining rooms: there were none around the central area. Dr. Roaf suggested that this central area might have been a covered room, since the lack of any slope to carry away water would have made it extremely muddy in wet weather had it been open to the sky. If it had been roofed over, however, one might have expected to find windows in the end walls, especially as the presence of a hearth would have made good ventilation eminently desirable; the area does not even have a door leading directly to the outside. The excavators of the other 'Ubaid houses of this type all describe the central area as a courtyard, although without specifying why. Given that a poplar and mud roof

can span a distance of up to 4 metres, none of these areas is too wide to have been covered over and the large expanse of flat roof thus obtained would certainly have justified the construction of a staircase, although flimsy construction and irregular plan again make it unlikely that there was a second storey. A courtyard in this position would certainly be convenient from the point of view of lighting and ventilation, but in the houses of the following period, which seem to have developed out of the 'Ubaid house, details such as white-painted plaster make it almost certain that this area was roofed. One would expect the nature of the flooring in this room to solve the problem; the surface of a courtyard would be unfinished and uneven compared with that of a room.

The Madhhur and Thalathat houses produced a similar range of finds and fixtures. Both were entered through antechambers in which stone door sockets indicate substantial outer doors. Neither house contained an oven, although there were several just outside the Thalathat house, but both had hearths in the central area. The Thalathat house had a certain amount of storage provision, with a bin set into the low L-shaped platform in room 2 and a large jar sunk into the floor in room 3; the Madhhur house had no such facilities, but a quantity of grain was found on the floor of room 3 and the small adjoining room 2 would have been a suitable size for a store-cupboard. The Madhhur house contained one burial, that at Thalathat five including one of a baby with an artificially deformed skull. In addition to pottery, spindle whorls, clay nails, stone

axes and flint and obsidian blades the inventory at Thalathat included a few more exotic items such as mace-heads of marble and ivory. The contents at Madhhur on the other hand were entirely mundane, consisting of the usual range of pots, spindle whorls, rubbing-stones and clay nails. Both houses produced clay 'sling-bullets' in very large numbers. If these objects are indeed sling-bullets their profusion suggests either a very aggressive or a very hungry population: it seems extraordinary that so many should have been manufactured when, at Madhhur at least, suitable water-rounded pebbles were available, but whatever their purpose they seem to have been an essential piece of 'Ubaid domestic equipment.

The Uruk.

The last stratum at Tepe Gawra considered by the excavators to belong to the 'Ubaid period is Stratum XII (Tobler, 1950, 25; fig. 119). The northern part of the settlement had been destroyed by fire and the excavators interpreted this and other signs of violence in this level as evidence that the 'Ubaid settlement had been sacked and taken by Uruk invaders, whose great defensive construction, the Round House, dominates the next level. Architecturally, however, Stratum XII is already in transition between the 'Ubaid and Uruk. Its builders have abandoned the symmetrical but slightly straggling flanking wings of the 'Ubaid houses with their stepped outlines to move towards the rectangular and almost excessively orderly plan of the Uruk house, most clearly seen at the Late Uruk site of Habuba Kabira in Syria. It therefore

seems more reasonable to consider Stratum X11 with the Uruk period.

The excavated area of Stratum X11 reveals a high density of settlement, so that although at least five large houses can be detected in the eastern part of the settlement (built round the central rooms 42, 21, 26, 28 and 98) they are not free-standing but are surrounded by fragments of walling and rooms belonging to smaller houses. In addition to the small houses in this part of the settlement there are several one-, two- and three-roomed houses in a row along the northern side of the street 53, 59, 78. This street is paralleled by a wider one to the north beyond the row of houses and both probably met the main route up the northern side of the tell. Between them at the edge of the mound was a three-roomed building (rooms 54, 55, 56) which the excavators saw as a watchtower guarding the approaches to the town, chiefly on the strength of its position. Another street probably ran down the south-western side of the excavated area to the southern point of access to the mound; the narrow alley 93 - 94 gave access from it to the houses to the east. The heavy north-eastern walls of these houses may have been designed to form a defence on this side of the tell; on the other hand, their thickness may have been a practical measure to prevent the houses from slipping down the slope of the mound.

Two buildings of interest open off the enclosed area 82 adjoining street 53, 59, 78. The function of the

curious building formed by rooms 84 to 92 is not clear; it is unlikely to have been an ordinary house, and apart from its slanting south-eastern wall its plan is very regular and the walls are carefully buttressed. On the north-eastern side of the square is the largest house of the stratum, formed by rooms 37 - 45. Its plan is slightly irregular due to the enlargement of the south-eastern side, but on the opposite side of the house the row of small rooms 46 - 49 has left the outer wall clear and in its original form. We can thus see that the plan differed from that of the 'Ubaid houses in being more nearly rectangular, with a long shallow niche in the centre of the outer wall; the wings are shorter than the central room, which projects beyond them. Although the other houses of this level are less regular and have been much altered, traces of the niched outer wall and projecting central room can still be seen, for example in room 26 and the outer, south-eastern walls of rooms 27 and 30.

The central room 42 of this house was white-plastered, and hence presumably roofed. It was entered directly from the open space 82 by two doors which faced two niches in the opposite end wall, against part of which there was a low mud brick bench. There was also a side entrance, perhaps the original one, to room 42 via room 37. The white plaster and niches of room 42, the size and regularity of the plan and the presence of a number of burials under the building have produced the suggestion that this was a religious building. None of its features, however, is unique, and it possesses a number of undoubtedly domestic features such as

the storage bin in the corner of room 43. There is of course no reason why the building should not have combined the ordinary functions of a dwelling-house with those of a more ceremonial nature. The house of the most important family could well have been used for meetings of various kinds.

The layout of the succeeding level at Tepe Gawra, Stratum XlA, shows considerable changes (fig. 120; Tobler, 1950, 17). The centre of the settlement is now occupied by a large circular building known as the Round House whose possible function has been much discussed over the years. The excavators interpreted it as a fortification with religious overtones, and its massive outer wall does indeed have a defensive air. Fortified circular buildings from the Early Dynastic period have been found in the Hamrin valley, for example at the E.D.1 site of Tell Razuk (Gibson, 1977, 44) where the Round Building was surrounded by ordinary rectangular dwellings as at Gawra. There is also an earlier example of a circular building from the 'Ubaid period at Tell 2 of Telul eth-Thalathat, below the house discussed above (Fukai, Horiuchi and Matsutani, 1970, 9). Only a small section was uncovered, so its overall size and function cannot be established, but a granary and some possibly industrial buildings surrounded part of its outer wall and at least its presence indicates that the tradition of circular buildings persisted through the 'Ubaid period. Some authors have seen in the plan of the Round House an adaptation of the tripartite house plan (Oates and Oates, 1976b, 132), but the only obvious similarity is the long central room. This not

only lacks the usual features such as pairs of doors opening off on either side, but it has a smaller room on each of its short sides and two rows of rooms, not one, on each of its long sides. The Round House may have been occupied, but as a fortress is occupied by its garrison rather than as a house is lived in by its owner's family.

The heavily-walled buildings (rooms 68 - 90 and 1 - 3) at either end of the street which originally ran through the settlement (58, 59, 55, 50A, 49, 107 and 154) have been seen as gatehouses guarding the entrances to the insecure Uruk settlement, although with the addition of rooms 66 and 67 the northern example looks remarkably like an ordinary tripartite house. The housing of this level is densely packed and the south-eastern walls, although not as heavy as those of the preceding level, do form a continuous line, but their value as a defense is minimised by the fact that they are interrupted by an open space and do not resume. Large open spaces are a feature of this level; there is one (74) in front of a building said by the excavators to be a temple, mainly on the strength of its plan. In view of the alteration of its southern wall to make room for an oven this attribution seems dubious. It is in the same area as a large tripartite house in the following level and the only unusual feature of its plan is the positioning of the entrance to the central room in the centre of the short wall. The 20 graves within the walls do not necessarily indicate a religious function, since there were 17 graves under the house formed by rooms 89 - 91 and 97 - 104.

Rooms 89 - 91 and 97 - 104 form one of three large units discernible in the confused jumble of housing which occupies the rest of the excavated area; the second consists of rooms 39 - 45 and a rather doubtful third of rooms 23 and 155 - 158. Only rooms 39 - 45 could be described as having a coherent ground plan, which conforms to the usual tripartite or central-room type. The central room was white-plastered and its end walls recessed back from the wings; the doorways of rooms 43 and 44 faced each other across it. It is however smaller in area than the rambling house unit 89 - 91 and 97 - 104 (see Table 3) and even if the so-called 'Temple' and north-western watch-tower are included as central-room houses it looks as if the form has undergone if not a temporary loss of favour then at any rate a change of status. In Stratum XI (Tobler, 1950, 14) small formless houses again predominate (e.g. rooms 30 - 32; see Table 3), although the one tripartite-plan house (rooms 58 - 63) is larger and more substantial than any of the other buildings of the level, and occupies a commanding position in the north of the town at the start of one of the partially-paved streets, above the 'temple' of Stratum XIA.

Elsewhere the tripartite house plan was thriving in the early part of the Uruk period. At Grai Resh on the Tell A'far to Sinjar road a sizeable house with six rooms was excavated (Lloyd, 1940, 13; fig. 121). The slight irregularities of its plan may be due to its proximity to the town wall. In many respects it closely resembles the tripartite houses at Gawra in having a more or less rectangular

outline, unlike the stepped outline of the 'Ubaid houses, and a pair of niches (which here started .50 metre above the floor and could therefore have been used for storage) at either end of the central room. The elaborate doorways to rooms 1 and 3 are a novel feature, however, (although see the Madhhur house, fig. 118, which also has a single niche in each end wall) and the numerous small interconnecting rooms of the 'Ubaid houses are replaced by four large rooms. As in all the houses so far, there is a preference for doors situated near but not at the corners of rooms. The house had burnt down and in addition to traces of white-painted plaster in the central room 2 there were pieces of the reeds and beams of the roof. Most of the finds came from rooms 1, 2 and 3 and are unistakeably domestic in character. Room 1 contained a large number of miniature and other pots, mostly ranged along a low shelf on two sides of the room, and a large storage jar in a depression on the floor contained a mixture of carbonised wheat and barley. Other jars held bones, no doubt the remains of nourishing stews. There was also a complete industry in flint and obsidian, several implements in chert and a copper knife. In room 3 there were three storage jars, and from here and room 2 came bones and horns of sheep, goat and water buffalo, three figurines, spindle whorls, baked clay sling-bullets, a mace-head of purple marble, two stone hammer-axes, a circular stamp-seal and two oblong seal impressions, beads of stone, clay and obsidian, implements of bone, a copper drill bit, a large basalt mortar and a number of querns, rubbing-stones and pounders. This assortment seems to cover most of the domestic activities from

food preparation to the making of clothing; one wonders whether the products of the flint- and obsidian-worker were for home consumption only or whether their trade contributed to the domestic economy.

A building interpreted as a temple by the excavator of Tell 2 at Telul eth-Thalathat is more probably a house (Egami, 1959, 6; fig. 122). Its attribution as a temple rests on the fact that it was unusually well-built, had a small structure of plastered brick, thought to be an altar, in the central room, and included in its list of contents two animal figurines. In addition, thick layers of greenish-grey ash in one room suggested 'sacrificial burning'. It seems more likely that this is a house: the 'altar' is not centrally positioned, and could just as well have been a bench or grain bin, and figurines were found in the house at Grai Resh. There is nothing in the plan that marks it as a temple: the only unusual feature is that the rooms of the eastern wing do not extend all the way along the central room or courtyard, and there is a door leading directly from this area to the outside as well as the more usual entrance through an antechamber. Most of the pottery on the floors was Uruk, but certain features of the plan such as the stepped outline of the western wing and the pair of long, narrow rooms are more characteristically 'Ubaid. Since it is said to have been exceptionally well-built, the house may have had an unusually long period of use, spanning the introduction of a new form of pottery, and like Stratum XII at Tepe Gawra it reminds us that prehistoric society

was not a game of musical chairs in which every aspect of life changed as soon as the pottery did. The remaining finds in the Thalathat house included spindle whorls, pestles and other stone implements, and large quantities of sling-bullets.

At Tepe Gawra, the tripartite house emerges from its eclipse in Stratum X (in the sparsely-settled Stratum XA there is only one, rather suspect, example; fig. 123) and it seems finally to have been adopted as the standard house form by all or most of the population (Tobler, 1950, 10; fig. 124). Many of the houses are very irregular and there are a number of variations on the theme, which consists fundamentally of a rectangular central room with one or more smaller rooms on either side. The two most regular examples are the houses consisting of rooms 1084, 1085, 1087 and 1088 and rooms 1054 - 1060 (to which rooms 1061 - 1070 are a later addition). The latter house was entered by two doorways opening from the central room directly onto the street, and on either side of the central room was a door with flanking walls reminiscent of Grai Resh. The walls of this house are very substantial and the outer face of the north-eastern side of the house is relieved by two long, shallow niches. The walls of house 1065 - 1068 are slighter but the doorways facing each other across the main room again are marked by flanking walls.

The houses in the northern part of the Stratum X settlement are densely packed and lack of space has forced their builders to compromise with their plans. The walls are

often thin and badly built and a few are of tauf, not brick. The houses built around rooms 1038 and 1010, bordering on two of the town's stone-paved streets, are the most coherent. This is the last level of Tepe Gawra to produce much in the way of domestic architecture; the house remains of Stratum 1X are fragmentary and in subsequent levels the contracting area at the top of the tell was increasingly devoted to religious and administrative buildings.

For a comprehensive picture of a Late Uruk city we are forced to rely on the evidence from Habuba Kabira, far to the west on the Euphrates. Unfortunately, until a Late Uruk house is excavated in Mesopotamia proper, there is no way of knowing how typical a settlement Habuba Kabira may be. It is not necessarily safe to assume that because the pottery is in the Mesopotamian tradition that every other aspect of material culture, much less society, will follow suit.

The city of Habuba Kabira was situated on the right bank of the Euphrates so that its eastern side was to some extent protected by the river and its escarpment. On the landward side the city was defended by a massive fortification wall enclosing an area of 17 - 18 hectares; this included fields and orchards as well as houses and temple and administrative buildings, the latter in the area of Tell Qannas (Strommenger, 1976, 14; fig. 125). Within the walls, the city plan grew naturally and not according to a single unified design. Housing originally followed the line of

the main street, and although as the settlement grew it became necessary to build the houses very close together, occasionally forcing the sacrifice of the desirably rectangular outline, they continued to conform closely to the ideal design.

The main street ran through the city roughly from north-east to south-west, turning sharply east in the north of the city to run towards the river. Up to 5 metres wide, it was cobbled and kept free of rubbish. At various points streets and alleys run off to either side, including one fairly sizeable street which led to the southern city gate. There was originally a street behind the city wall, but it was clearly unimportant since it became blocked by small houses and workshops built up against the wall. The houses did not open directly onto the main street, which was faced by niched but otherwise blank walls; access to the houses was obtained by narrow alleys in which, in strong contrast to the main street, rubbish accumulated freely. A stone door socket at the entrance to one of these alleys indicates that it could be closed off at will. Despite their function as dumps for refuse, some alleys were neatly paved with pebbles and pieces of limestone, and rain-water was carried off in stone-lined drains. House walls bordering on alleys were protected by short banks of clay, a precaution still in use in the area today. In one phase of the city there is evidence in Square M 111 for a fresh water supply: a water-pipe of jointed earthenware sections passed through the north-western corner of the courtyard, protected by lime-

stone slabs, and flowed into a roofed limestone channel with a bottom of clay over a bed of pebbles. The pipe fell from the river bank towards the centre of town and is therefore unlikely to have been used for drainage. If it did indeed bring in fresh water to the city, this must be one of the earliest examples of piped water supply in the history of hydraulic engineering.

It appears from the small-scale published plan (fig. 125) and the preliminary reports (Frank, 1975; Frank and Ludwig, 1973; Strommenger, 1976) that the houses of Habuba Kabira conform more or less closely to a single plan. Each house consists of a long, rectangular room with rows of smaller rooms on one, two or three sides. At least one of the short sides of the central room was left free, probably for purposes of ventilation and lighting. Wherever possible, the long walls of the central room were divided into four parts by three doors or niches facing each other in pairs across the room. The entrance usually led through one of the small side rooms, so that the central room was protected from the glances of passers-by and the dirt of the street. The houses were presumably single-storied; the excavators are assured that the central rooms were covered, so that there could be no access to the roof from them, and there are no signs of staircases. In any case, most of the houses are quite large and although it is not always possible to determine from the plan which rooms are connected the number per house seems to vary from three to fifteen, and the average is probably about five or six. Most of the smaller,

irregular buildings like those along the city wall or south of the large house in Squares M - N 11 - 111 seem to have been stores and workshops, so that as far as housing is concerned the city is dominated by the tripartite or central-room plan.

At least two of the houses at Habuba Kabira show an interesting variation in the shape of a large courtyard with an impressive room on either side. The excavators have paid particular attention to the house in Squares M - N 11 - 111, which covered an area of over 500 metres^2 (Frank and Ludwig, 1973, 11; fig. 126). It lasted through various phases and alterations, but the original core of the house consisted of the central-room house on the east (rooms 1 - 8), the courtyard and rooms 9, 10 and 12, and then the workrooms to the west, being added on later. The walls were of untempered mud brick, plastered on both sides, on foundations of split limestone and, in one place, clay. In rooms 5 and 8 there were traces of yellowish-red paint. The walls varied in thickness: those facing courtyard 11 were exceptionally solid, probably to add emphasis to the doorways, although insulation may have been a consideration. Floors were of mud plaster, with a layer of gravel in the courtyard and outside the entrances, and some mud brick paving in a later phase. Doorways had mud brick thresholds and limestone door sockets indicate timber doors. Plaster impressions provided evidence of lintels made out of circular logs. In the central-room house in particular great care was taken to arrange the doorways symmetrically, and the door to

room 7 is balanced by a niche on the opposite side of room 5.

Curious pan-shaped installations of clay which were found in several rooms of the house carried traces of burning and were interpreted as hearths or cooking-places; they occur elsewhere in the city. Ovens were found to the south-west and north-west of the house. Finds and installations together suggest that rooms 1 - 8 were the main living-quarters of the household. They produced many ordinary domestic objects such as pottery, flint and obsidian implements, beads of various materials, spindle-whorls, loom-weights, fragments of copper and tablets bearing numbers. The rooms around courtyard 11 were cleaner, with only a few scattered finds, indicating that this part was not so much used. It may have been reserved for the reception of guests, who could have entered this part of the house through room 9 without intruding on family life. Habuba Kabira seems too substantial a settlement to have been a mere trading station, an outpost of Mesopotamian commerce, but it is likely from its position that trade between Mesopotamia and the lands bordering the Mediterranean played an important part in its economy and in that case the entertainment of travellers could well have had an important role in commercial affairs.

In an article on the proportions of this house, Frank established that the unit of measurement employed was c. .49 metre, the Sumerian kuš, corresponding to the distance

from the middle finger-tip to the elbow (Frank, 1975, 7). The width or length of a room plus one wall generally came to a whole number of kuš; thus the width of room 5 - 7¾ kuš - plus one wall - 1¼ kuš - came to 9 kuš. Doorways were included in this system of proportions, being 1, 1½ or 2 kuš wide. The side rooms of the central-room house are sufficiently wide at 4 kuš to allow a man to sleep outstretched, and Frank points out that as elsewhere in the Uruk and, indeed, in modern houses in the area the positioning of the walls near but not at the corners of the rooms leaves a space free along the wall for the storage of bedding, pots and other possessions. Frank's work on proportions confirms what the overall city plan suggests, that the builders of Habuba Kabira had a clear mental image of the ideal house. Some of the details, like the rectangularity of the rooms, could be altered to conform with the requirements of the site, while others, such as the division of long walls by three doors or niches or the operation of a simple system of proportions based on the kuš, were clung to tenaciously.

Similar central-room houses, some with adjoining courtyards, were found at the nearby site of Jebel Aruda (Van Driel and Van Driel-Murray, 1979). This settlement has been interpreted by its excavators as a sanctuary with houses for the personnel which probably lasted for less than a century. The housing included one exceptionally large unit south-west of the temple with a central courtyard flanked by a central room unit on either side, perhaps an official

residence of some kind. To the south and east of this building, and also to the north-west of the sanctuary, were more ordinary but still well-planned and strictly rectilinear houses with many of the features seen at Habuba Kabira, including pan-shaped hearths (and also rectangular ones), opposing pairs of doors and niches, gravel floors in unroofed areas and rooms with unusually heavy walls facing the courtyard. The area of city plan excavated at Jebel Aruda is smaller than that of Habuba Kabira, but the builders of both clearly belonged to the same tradition.

Although the domestic architecture of Habuba Kabira and Jebel Aruda is governed by a more formal and rigid set of rules than that of Tepe Gawra, it is recognisably part of the same tradition, the major innovation in plan being the addition of rooms on the third side of the central room. A more significant difference lies in the fact that the houses of Habuba Kabira show much less variation in size and regularity than those at Tepe Gawra. At its first appearance in the 'Ubaid Stratum XV the tripartite-plan house is accompanied by smaller and less impressive examples, and the upper 'Ubaid levels of Arpachiyah produced the fragmentary plans of small, poorly-built houses of mud brick or tauf (Mallowan and Rose, 1935, 11) to show that the large tripartite house is not an invariable adjunct of 'Ubaid culture.

It is in the transitional Stratum XII at Tepe Gawra, however, that the disparity between the large, well-built tripartite houses and the rest is most marked. It seems

probable that this distinction reflects differences in status based on control of the means of production, or in other words on the ownership of land. The tripartite houses would then have housed the large extended families of the land-owners, the irregular, unplanned houses the families of their clients and dependents or of independent craftsmen and labourers. The dominating size and position of the White Room House indicates that there were distinctions in status within the land-owning class, and the fate of the house form in subsequent levels conveys a history of fluctuating economic fortunes and social upheavals in the town. By Stratum X the tripartite house form seems to have been adopted by the whole population, although in the intervening levels it is represented by only one or two examples, usually though not always the largest and best-constructed houses of the period. At the Late Uruk site of Habuba Kabira, as we have seen, the tripartite house dominates and although there are considerable differences in size all seem to be well-built in conformity with the same ideal scheme, so that distinctions of status were presumably less than in, for example, Stratum X11 at Gawra.

In some of the 'Ubaid houses (e.g. Madhhur, fig. 118) similar groups of rooms occur on each side of the house, an arrangement which may reflect some parallel division of the occupants. It is unlikely that the division was based on sex, for such a separation would hardly extend to sleeping arrangements, but it could have accommodated the households of the land-owner and his heir, or reflect some other joint

system of inheritance. Whatever the reason for the arrangement, it disappears in the Uruk period. The presence of only one hearth in most of the tripartite houses need not preclude their occupation by extended families, since it has been observed in many such societies that food preparation and cooking are shared to save fuel and labour. There has also been observed a tendency for the extended family, occupying a single dwelling, to be associated with a system of inheritance in which the estate is divided equally (at least in theory) among all the sons or all the children of the owner (a pattern which persists in Egypt - Ammar, 1954). The concentration of the inheritors under one roof counteracts the fragmentation of the estate.

It is greatly to be regretted that comparative evidence is lacking for the south of Mesopotamia for this period. Without it we cannot know how typical of the Late Uruk Habuba Kabira may be. Was it a nervously fortified Mesopotamian enclave (an enclave which must have included Jebel Aruda), fully in touch with the rest of Mesopotamia, or was it influenced by the traditions of the Levant? Writers on early Sumerian society have envisaged a situation in which land was held by two classes: a nobility whose land was worked by dependents, and a 'middle class' who worked the land in hereditary possession of their patriarchal clans, the extended family commune being typical of both (Diakonoff, 1972, 47; 1959, 8). The temple is no longer seen as the dominant economic institution of Sumerian society; it was only one among numbers of large estates engaged in the production

and distribution of goods and services (Yoffee, 1979, 5). Certainly neither Habuba Kabira nor Tepe Gawra presents the picture of a community dominated by a theocracy; the excavation of an area of housing in southern Mesopotamia is badly needed to redress the unbalanced view produced by long concentration on temples and palaces. It would not be surprising if such an excavation showed us a more heterogeneous society than texts alone can reveal.

TABLE 3: 'UBAID PERIOD

Raidau Sharqi	House 15	79 metres^2
Tepe Gawra: Stratum XlX	House 32-51	c. 150 metres^2
	House 7 and 16-18	25 metres^2
Stratum XVll	Tholos 21	15 metres^2
	Tholos 36	13 metres^2
	House 6, 7, 13 and 14	20 metres^2
Stratum XVl	House 14-24	39 metres^2
	House 27-31	28 metres^2
	House in G and E 6-7	41 metres^2
Stratum XV	House 37-38	20 metres^2
	House 40	14 metres^2
	House 15-34	110 metres^2
	House 3-9	40 metres^2
Stratum XlV		214 metres^2
Telul eth-Thalathat:		
Tell 2 Stratum 14		15 metres^2
Tell 2 Level C		78 metres^2
Tell Maddhur		178 metres^2

TABLE 3: URUK PERIOD

Tepe Gawra:	Stratum XII	White Room House	173 metres^2
		House 25-27, 30-31, 105	105 metres^2
		House 62 + 76	18 metres^2
	Stratum XIA	'Temple'	98 metres^2
		House 89-91, 97-104	77 metres^2
		House 39-45 (N.W. Watch-tower)	44 metres^2
	Stratum XI	House 58-63	86 metres^2
		House 30-32	17 metres^2
	Stratum XA	House 34-40	70 metres^2
		House 20-21, 50-53	83 metres^2
	Stratum X	House 1054-1060	133 metres^2
		House 1084-5, 1087, 1089	38 metres^2
		House 1008-10, 1015-1017	47 metres^2
Telul eth-Thalathat:			
	Tell 2	'Temple'	80 metres^2
Grai Resh			83 metres^2
Habuba Kabira		M-N 11-111	500 metres^2
		AA X	173 metres^2
		AA XI	66.42 metres^2

CHAPTER 5

The Early Historical Periods to the end of the Dynasty of Agade.

Although the evidence for town planning and domestic architecture is slightly more plentiful for the Early Dynastic and Akkadian periods than it was for the preceding 'Ubaid and Uruk, the great urban centres of the extreme south are once again barely represented (fig. 127), largely because excavators have concentrated on temples and palaces. Much of the available information on housing is provided by the long sequence at the Diyala sites; at Khafajah (ancient Tutub) the housing levels begin in the Protoliterate and end in the E.D. lll period, although the remains from the earliest levels are too fragmentary to provide much information, while at Tell Asmar (ancient Eshnunna) the sequence stretches from E.D. lll to the early Larsa period, the last three strata (from the period of Gutian rule onwards) being severely denuded. There is no comparably long-lasting site for northern Mesopotamia, but the extensive surface remains of Tell Taya in the north provide the most comprehensive picture of a town plan of this period.

Southern Mesopotamia.

At two sites in the south, Warka and Abu Salabikh, there are traces of settlements from the transition between the later prehistoric and Early Dynastic periods which, though slight, seem to agree. At Warka, excavation outside the temple area found several closely-grouped phases of

building remains, the earliest being of Jemdet Nasr/E.D. 1 date (Lenzen, 1939, 17; Taf. 11). The most striking feature of the plan was a curving wall over 40 metres long and 2 metres thick, behind which at a distance of .50 metre or less was a slighter inner wall. Both walls showed a series of rebuildings and the excavator suggested that they had served as the border of a residential area to the east, although because the ground sloped away in this area the houses excavated were later in date than the two walls. These house remains were only partly constructed of mud brick; it was suggested that, as in modern villages in the district, only the main rooms were of brick, the others being for the most part built out of reed mats. Several large pits were excavated around the houses, perhaps for storage; one was found filled with ashes and soot, and may have been connected with some craft practised by the occupant of the house. The area also produced, in addition to the usual pottery and tools, stone vessels in all stages of manufacture, from the quarried stone to the fully worked vessel.

At Abu Salabikh the evidence of E.D. 1 settlement on the West Mound is derived not from excavation but from surface scraping, and is therefore lacking in detail, but there seem to have been four contemporary enclosures surrounded at least in part by walls comparable in size to that at Warka. Postgate (1980, 99) envisages these as having been self-contained households of the type postulated by Gelb (1972, 90) and Diakonoff (1959, 8), based on a patriarchal

family unit administering an estate which included residential buildings for the family and dependent labour, shelter for animals, storage facilities, fields and orchards. Only excavation can establish conclusively whether the surface remains at Abu Salabikh represent this sort of large-scale household, but for precedent one might consult the 'Ubaid site of Raidau Sharqi, described in the last chapter and also known only from surface remains. It is possible that the less grandiose village household which seems to be represented there survived the transition to the earliest towns to become the sort of household for which Gelb and Diakonoff find evidence in the texts. There is, however, no evidence to support a similar development in the northern part of Mesopotamia.

There is certainly no indication of large walled households even in the earliest levels at Khafajah (fig. 128; Delougaz, Hill and Lloyd, 1967, 3), which although fragmentary seem to foreshadow the more comprehensible plans of later levels. It has sometimes been suggested that the house area at Khafajah is atypical, situated as it is between the Sin Temple and, from E.D. 11 onwards, the Temple Oval (Crawford, 1977, 35), but although there may be an unusually high proportion of large houses in the area they do not differ markedly in type or construction from slightly later houses elsewhere, at Fara or Tell Asmar.

The earliest levels at Khafajah, Houses 12 - 7, are essentially a series of rebuildings with only minor changes

in plan, new walls being founded upon old, although there is a general tendency towards larger houses. The dead are buried within the walls, at first in simple earth graves and later occasionally in brick tombs, but the practice gradually dies out until in Houses 1 (E.D. 111) there are no longer any intra-mural burials. Plano-convex bricks appear for the first time in Houses 10, replacing the large rectangular bricks of previous levels. The reasons for the adoption of the plano-convex brick with its gently-rounded upper surface have been much discussed, but the problem has never been satisfactorily resolved. Arguing from analogies with modern stone building techniques in northern Iraq, Delougaz suggested that the form was introduced by peoples moving into southern Mesopotamia from the foothills, bringing a tradition of building in stone which was expressed in their new surroundings by means of the plano-convex brick laid in a herringbone bond (1933, 38). Woolley on the other hand envisaged the plano-convex brick as a symbol of Sumerian nationalism, adopted as they cast off the foreign yoke of the Jemdet Nasr people, and adds, "It would be a fantastic explanation, but not so fantastic as the brick" (1955, 35). Eaton-Francis explains the new form on economic grounds; one phase of the moulding process, that of smoothing the brick's upper face, was omitted. Bricks could be made faster and the increase in size meant that fewer were needed (1972, 7). It is true that the clumsy shape of the brick could be compensated for by the use of more mortar and the introduction of herringbone bonding, a technique suited to irregular material, but any saving of time in manufacture must have been more than compensated by loss of

time in building with this unwieldy and unstable shape. It is difficult to explain the adoption and continued use of the plano-convex brick in any terms more satisfactory than those of fashion, although Gibson has recently pointed out the similarity between the form and techniques of plano-convex brick building and the walls of herringbone-laid turves which may be seen today in southern Iraq (1978, 96).

The excavated houses of Houses 12 - 7 at Khafajah are for the most part incomplete and little can be said about their plans, although from Houses 8 onwards there is one large house across the small alley running down the south-west wall of the Sin Temple, and the small shrine in the centre of the excavated strip is a feature of the area from Houses 11 onwards. In Houses 6 (fig. 129; Delougaz, Hill and Lloyd, 1967, 9) a radical rebuilding took place; the walls were more substantial, the houses considerably larger, and in House 32 next to the Sin Temple there is the first example of a house plan that is to have a long history in Mesopotamia, with a central courtyard surrounded on each side by one or more ranges of rooms. Several of the doorways have had to be reconstructed, but other houses of this level have only one entrance and it seems most likely that a door from the street to the north gave onto the vestibule, off which opened a small room containing an oven and through which the courtyard was reached. In all, the house consisted of nine rooms in addition to the courtyard, three of which were large rectangular rooms opening directly onto the courtyard. Behind the largest of these, P43:23, and only accessible

through it, was the long narrow room P43:25. West of the Small Temple, larger in this level than ever before, and separated from it by a narrow lane is another block containing the two houses 33 and 34, which in turn are separated from the enclosure wall of the Temple Oval by a wide street.

Within the enclosure wall of this first phase of the Temple Oval is House D, which was presumably the residence of the temple's highest official (fig. 130; Delougaz, 1940, 44). Although much larger in area than house 32 (see Table 4) and rather more regular, it is not essentially different in plan, with a single entrance and one or more ranges of rooms around the large central courtyard. The walls were of plano-convex mud bricks plastered on both faces and differed chiefly from those of other houses in having been founded, like the rest of the Temple Oval, on clean sand. Part of the house had been destroyed by fire and as a result pieces of the roof in room L43:9 (including wasps' nests) had survived so that a detailed reconstruction of the roof could be made. The room was spanned across its width by beams .20 metre in diameter and about .30 metre apart. Across the beams was a layer of mud plaster. The reeds and plaster were supported by cross rafters which projected above and across the walls to form the eaves; shallow grooves were cut in the beams to take the rafters and the upper parts of the beams were plastered to provide a surface for the mats. Although unusually refined, this method of roofing is not very different from that employed in the 'Ubaid period at

Tell Mefesh in Syria (see above, Chapter 4), or indeed from that in use today, for similarly projecting eaves may be seen in modern Syrian houses (see Chapter 2).

More information is available on the fittings and contents of House D than the other houses at Khafajah. The simple entrance was closed with a door which hinged on a pivot stone just inside the doorway in the entrance hall, from which a corridor led through two separate antechambers (perhaps one for visitors and one for the household, as the excavator suggested, or one for the family and one for servants) to the courtyard, L43:2. In the north corner of the courtyard was a structure of bricks plastered with bitumen from which a drain led through room L31:1 to the outside. Two large rectangular rooms and several smaller ones opened onto the courtyard, with further rooms behind them on the south-west and south-east sides. The largest room, K43:3, bore traces of white lime plaster, and its position near the first of the two courtyard entrances led Delougaz to suggest that it was a reception room, while L43:9 was the living-room of the family. The contents of K43:3, which had a square structure measuring 2 x 2 metres against one wall, are not particularly illuminating; they included a strange clay object, perhaps the leg of a low table or divan, two basalt hand mills, a stone plaque, sea-snail shells and charred flax seeds. The contents of the two small rooms behind K43:3 were equally prosaic; K43:5 held a large, round flat stone set into the centre of the floor and a great number of objects including an assortment of pots, flint blades

hafted in bitumen, and charred lentils and barley (containing fibres which may represent the original sack), while K44:5 contained a basalt grinder and rubbing stone. Of the rooms on the opposite side of the court, L43:4 was equipped with a lime-plastered structure of plano-convex bricks and may have been the domestic chapel, while M43:9 with its oven or cooking range must have been the kitchen, despite being situated on the opposite side of the house from the food stores. A fishing net complete with wooden float and clay sinkers was found in room L43:7; like the flint sickle blades, this implies that the household of this high functionary was indeed a self-contained unit of the type envisaged by Gelb, occupying a building which despite its size and position belongs to the architectural tradition of the private house rather than that of the palace.

The practice of having more than one range of rooms on one or more sides of the courtyard, seen at Khafajah in House 32 of Houses 6 and more extensively in House D, appears at other sites including Mari (see below) and Fara (ancient Shuruppak), although it must on occasion have created difficulties with lighting and ventilation. Unfortunately the dating of the houses excavated at the latter site is somewhat obscure; the house in VII u (fig. 131) resembled House 32 at Khafajah in having a long narrow room situated behind its main room and only accessible through it (Heinrich and Andrae, 1931, 13), but the paving of baked bricks and asphalt in the courtyard and room 5 is a feature which suggests a relatively late date. Some of the other houses at Fara, though fragment-

ary, were obviously part of much more imposing structures; for example, the house in XIII f, though incomplete, was more than 33 x 28 metres (924 metres^2) in area, and used baked bricks extensively both in paving and as a facing for the outer walls along the street (Heinrich and Andrae, 1931, 14 and Abb, 12). Since the plan of the building is also unusual, with a self-contained suite of three rooms in which a number of tablets were found and which was identified by the excavators as the occupant's business premises, and with a long narrow passageway leading to the rest of the building, it may well be that Crawford (1977, 35) is correct in identifying this as a public building. Other buildings at Fara include a fairly regular house in VI a-k built around a courtyard and chiefly remarkable for having a pointed archway in the door between two of its rooms, and a number of irregular and incompletely-excavated houses on either side of a north/south-running street over 2 metres wide; these buildings are unusual in that their walls follow the alignment of the street and the corners are not orientated to the cardinal points, as are those of the great majority of Mesopotamian buildings.

At Khafajah, the plan of the housing area between the Sin Temple and the Temple Oval persisted with only slight alterations into Houses 3, all buildings of which were covered by a .10 - .35 metre thick layer of ashes. In the succeeding level, Houses 2, there is much destruction in the area between the Sin Temple and the Small Temple, but the more or less complete plans of two large houses, 45 and 46, were

recovered (fig. 132; Delougaz, Hill and Lloyd, 1967, 15); like other large houses in this area in the past, these may have been the dwellings of temple officials. House 45 is regular in outline but the two rooms on the north-east do not communicate with the rest of the house, and only one of the rooms opens directly onto the courtyard, producing a very awkward pattern of circulation. The only certain entrance is from the lane to the south-east and the two other entrances shown on the plan are reconstructed, although it would have been unusual for a house of this period to have more than one entrance; the poor condition of the walls no doubt created difficulties in determining the exact position of doorways. Across the lane is the larger and more rambling House 46, which seems to consist of an original core - the rooms around courtyard 044:15 - to which the jumble of rooms on the north-west has been added. Part of the street between this house and the Temple Oval was blocked and plastered with bitumen to carry off water from drains in the enclosure wall; it was also used by a drain from House 46. Another lane was blocked, apparently to provide an extra room, in N43:32 to the north of House 46. As in other streets of this level and elsewhere, one corner was rounded off while the other remained a sharp angle.

Houses 1, dating from the latest phase of the Early Dynastic period, is in some ways the most interesting of the housing levels at Khafajah, for it is the only one to show signs of formal planning (fig. 132; Delougaz, Hill and Lloyd, 1967, 17). Seven small-to-moderate sized houses were neatly

laid out within an enclosure wall 2.60 metres thick which had been built to respect the boundary of Sin Temple X on the north-east; the site of the entrance and the course of the wall on the south-western, Temple Oval side are not known. Within the enclosure there was a long straight street from which three narrow alleys gave access to the houses and to a number of isolated rooms and small suites not apparently used as living quarters, such as the six rooms on the north-western side of lane P44:11. The walls of the quarter were of plano-convex bricks, a small proportion of which were baked. House 49 possessed a room with a bitumen-covered floor from which a drain led to the open space P45:10 which was later blocked off to become the site of one of several public staircases leading either to the roofs or to the top of the wall. There were no graves within the houses of this level. The houses consisted of two or more ranges of rooms with a central courtyard and were usually provided with at least one large rectangular room; in several cases the entrance led directly into the courtyard and in House 53 screen walls were built to shield the rooms just inside the entrance.

The town of Khafajah (fig. 128) was already fortified with a wall 6 - 8 metres thick, strengthened by towers at intervals of 33 - 42 metres, so the justification for this enclosed quarter is not clear. The excavator suggested that it could have afforded protection from the other inhabitants, possibly for recent conquerors of the town, arguing that there is a military air in the quarter's straight streets, neat

houses and many storage rooms and pointing out that it occupied a good defensible position on the highest point of the mound near the Temple Oval (itself defensible) and one of the town gates. It is true that the foundations of the Akkadian period to the north-west seem to represent a similar enclosure, with a thick wall surrounding individual units, but the area would have held only a small garrison, especially as the houses evidently provided family accommodation. It seems most likely that the quarter was built to provide security for one sector of the city, perhaps the personnel of the two temples, against the rest of the population, either because of general disorder or specific resentments.

In discussing the houses encountered so far it has been assumed with the excavators that the central area which is so prominent a feature in many cases was an open courtyard. The excavator of the private house area at Tell Asmar, however, H. D. Hill, considered that the central space in the houses there was a roofed main room (Delougaz, Hill and Lloyd, 1967, 148). The difficulty of deciding between main room and courtyard has already been encountered in relation to houses of the 'Ubaid and Uruk periods, when although it seemed on balance most likely that the former had courtyards and the latter main rooms, no very satisfactory conclusion was reached. Most writers on modern house forms in the Near East (e.g. Sinjab, 1965; Reuther, 1910) trace the descent of the town house built on four sides of a courtyard from the village house, which begins as a simple one- or two-roomed house of mud brick standing alone to which a high

rectangular enclosure wall and further rooms around the sides of the enclosure are added as time and resources permit. Andrae envisaged a similar line of development for ancient houses, although his distinction between the 'Herdhaus' of the north and the 'Hürdenhaus' of the south is no longer accepted (1927, 1036).

The surface traces of the 'Ubaid settlement of Raidau Sharqi provide the only evidence that village housing in the distant past resembled that in use today, in which as Chapter 2, Table 1 shows the proportion of open courtyard to roofed area is relatively great. The courtyard of the town house, however, which need no longer fulfil functions such as providing shelter for the flocks at night and which is limited by the high cost and low availability of land, is necessarily smaller in relation to the total house area and thus acquires a number of special properties which are summarised by Al-Azzawi in his article on the traditional courtyard house in Baghdad (1969, 91). Heat loss by radiation during the night enables the courtyard to remain relatively cool for most of the day. Ideally, the height of the rooms surrounding the courtyard should be greater than any of its plan dimensions to obtain the maximum amount of shade even at midday, but even in a single-storey building a small courtyard can remain shady, especially if the rooms on the southern side are built higher than the rest. The low relative humidity of the air in summer can be raised to a more comfortable level by means of a fountain, plants or even the disposal of waste water, and the temperature

difference between sunlit courtyard walls and the rest of the house helps to set up a current of air which provides ventilation and improves the comfort of the surrounding rooms (Pethèrbridge, 1978, 199). The narrow streets of Near Eastern cities help to keep down the internal temperature of the house by reducing the amount of sunlight falling directly on the outer walls, and careful siting of the outer doorway (and of windows) will enable a through draught to be set up as hot air rising from the courtyard draws in cooler air from the street. The siting of ovens next to the street door or the courtyard can increase this effect. Other cooling devices, such as the wind-tower and the cooled cellar or sirdab, were introduced into the Baghdadi house over the centuries, and although some of the discomfort of crossing the courtyard in the cold, wet winter could be avoided by building galleries it was essentially a house form adapted for the intense heat of the summer. As in many vernacular traditions of architecture where the housing is designed primarily to alleviate the effects of the weather at its most extreme, the discomforts thus incurred during the rest of the year were apparently felt to be of minor significance.

At Tell Asmar (fig. 133), Hill believed that the houses were built around a roofed main room and postulated a development from the simplest type of house, with a large room flanked at the back by two small rooms ('single-flanked main room' type) through a form with a second row of rooms facing the first across the main room ('double-flanked main room' type) to the final form with a range of rooms on each side ('fully-

flanked main room' type). He argues that if the central space had been unroofed it would have been more reasonable to enlarge the house by building another row of rooms down one side communicating with the first, since it would have been inconvenient to pass across the open space in all weathers. He also points out that fireplaces occurring in courtyards would have been unuseable in wet weather (Delougaz, Hill and Lloyd, 1967, 145 - 151).

In many cases, the dimensions of the central area provide the most cogent argument against its having been roofed; the enormous 9 x 10 metre courtyard of House D at Khafajah may be exceptional but there are many others which could not easily have been roofed with the sort of timber available in Mesopotamia (e.g. at Khafajah in House 32 of Houses 6 or Houses 45 and 46 of Houses 2, or at Tell Asmar the Arch House of most levels and Houses 33 and 37 of lVa). At Fara the central area of the Vll u house not only measured 7 x 5 metres but was paved with bricks and asphalt, suggesting that it was open to the weather, and there are areas of paving and washing-places in a number of houses which would make more sense in courtyards than in living-rooms. The great majority of houses have in addition to the courtyard one or more rooms large enough to serve as living- and sleeping-rooms, so that the accommodation provided by a roofed main room was not essential.

It is of some interest that on the two occasions at Khafajah when houses were built without regard to the under-

lying walls, the plans closely resembled each other; despite the difference in size, House D and the houses within the enclosure of Houses 1 are very similar in internal arrangement. It seems reasonable to suppose that if the central space of House D was unroofed, that of the smaller houses was also unroofed, since both have been constructed according to the same ideal plan. That it is an ideal plan is demonstrated by the fact that it appears in contexts like the circular house model found at Mari (Parrot, 1955, 192), which consisted of three rows of three compartments each; the central compartment had slightly higher walls than the others. Such a model does not of course indicate whether the central area was roofed; nor are the ground-plans which occasionally appear on tablets of much assistance in this respect. Of seven Akkadian plans collected by Heinrich and Seidl, only one, from Tell Asmar, is sufficiently complete and coherent to be recognizable as a house plan of this type, and it carries no indication of whether the central space was roofed or not (1967, 29); another plan, from Tello, shows a six-roomed building which may or may not have been a house. There is no central room and the scribe seems to have been preoccupied by setting down the dimensions rather than drawing the plan of a real building; it may represent an exercise in surveying rather than an architectural design. An Akkadian ground plan tablet from Nippur, though broken, shows a large house divided into two wings each with its own central space, but once again there is nothing to indicate whether these are roofed or not; one interesting feature of this tablet is that it shows an

internal stairway to the roof (McCown, Haines and Hansen, 1967, 41 and Plate 52). These representations of houses suggest that the house planned around a large central space was considered the most desirable form and it seems most likely that this central space was not a covered room but an open courtyard.

The houses of Tell Asmar are built almost entirely of mud brick, plastered with clay mixed with chaff; only two houses of Stratum lVa had baked brick damp courses (Delougaz, Hill and Lloyd, 1967, 151). The bricks were usually of the fine clay sandy soil of the area, sometimes black with ashes, suggesting that the material from which they were made came from occupation deposits within the town. Mortar was of clay like that used for the bricks. In Vc to lVb plano-convex bricks were used, typically in a herringbone bond, but by the later Akkadian levels square bricks (c. .37 x .37 x .06 metre) had come into use. Walls were generally founded on earlier walls, often with a layer of reed matting between the old and the new walls to improve the grip. Floors were of earth, pounded, and were renewed when a sufficient quantity of household debris had accumulated on them. There was occasionally a partial coating of gypsum in the entrance hall and courtyard, which received most wear. Baked brick paving does not seem to have been used in ordinary houses until the end of the plano-convex period - it must have been difficult to lay - but in Akkadian and later levels bathrooms and lavatories had baked brick paving, generally coated with bitumen. As in all mud brick houses alterations and

additions were frequent. Internal stairways were not found and since expansion often took place at ground level the houses were probably single-storied, the flat roofs being accessible by ladder, although it is possible structurally that some houses had a second storey over at least part of the house and that some of the structures interpreted as benches were the bases of flimsy stairs.

Doorways were on average .75 metre wide and stone and baked brick door sockets indicate that on occasion they were closed with wooden doors swinging on upright poles, especially at the street entrance. Arches over doorways of the Vb 'Arch House', House 2, were only c. 1.50 metres high; flat wooden lintels were probably also used. The Vb Arch House was also unusual in possessing an interior window .25 metre across and baked clay grilles for closing such windows were found. Most houses were equipped with at least one circular clay bread oven, like the modern tannur, often with a clay bin next to it to hold the ashes. Other, larger, domed ovens with stokeholes of a type often mistakenly identified as kilns were found; they were probably used for baking raised bread. The Arch House had a cooking range in Levels Vc and b. Hearths could consist of open scoops in the floor or baked bricks set on edge. Other fittings included quadrantal altars, perhaps in private chapels, clay storage bins, mud brick benches, jars sunk into the floor, and bathrooms with vertical baked clay drains or channel drains of baked brick. Only one burial was found, apparently in an abandoned house.

The area exposed in Stratum Vc, the earliest level reached in the housing quarter at Tell Asmar, was not very extensive but included the Arch House, which persisted in the same area until Stratum II, and two neighbouring houses along the north-western side of the Middle Road (Delougaz, Hill and Lloyd, 1967, 164). The Arch House in this level (fig. 134) consists of eleven rooms surrounding a courtyard J19:27, reached from the street through vestibules J19:52 and 68. The courtyard and vestibule had areas of gypsum flooring, with a pot set into the floor by the street-door and a basin-like depression in the courtyard, probably both for washing. The courtyard and room J19:79 both contained bench-like structures of mud brick. Room J19:41 was the kitchen, in a well-ventilated position between street and courtyard; in addition to a circular bread oven it held a kitchen range, a structure of unbaked brick 1.75 x 1.40 metres, with three 'rings' on each side heated through flues from a central firebox. It is unlikely to have been covered, as the ridge of clay which ran round the back was too thin to support a dome. No door was discovered to the rooms on the south-western side of the courtyard but they seem most likely to have belonged to the Arch House.

Stratum Vb (Delougaz, Hill and Lloyd, 1967, 165) comprised a slightly longer strip at the north-west side of the Middle Road extending southwards to West Street, which meets the Middle Road at right angles. In addition to House 1 to the south-west of the Arch House, which followed a regular plan with a range of rooms on each side of the courtyard,

there were two smaller units of six rooms each, probably occupying a plot originally taken up by a single house. The Arch House of this level had expanded to include the small house to the north-east (fig. 134). The room J19:41 still held a kitchen range but bread-making had been transferred to the room next door, where two ovens were confined within a low screen wall which kept the ashes from spreading. The excavator argued that the circular hole .20 metre in diameter in the centre of the courtyard of this level opposite a corbelled pier on the north-east wall (there were two similar piers in the entrance hall) was the site of support for a short and sagging beam eked out by the pier, and therefore evidence that the area was roofed. This is unlikely, for a short beam would be all the less likely to sag, and in any case, once a mud-plastered roof starts to sag water collects in the depression and the only cure is to remake that part of the roof. Four of the doorways of this level were spanned by arches, achieved chiefly by wedge-shaped mortar joints with some shaping of the bricks; their maximum height was c. 1.50 metres. Two of the doors opening onto the courtyard have doorsills, probably to keep out rainwater. Another interesting feature of the house in this stratum was the window about 1.70 metres above the floor and .25 metre wide between room J19:64 and the vestibule J19:68; a ridge of clay on the window ledge suggested that it might have been closed by the sort of baked clay grilles found elsewhere at Tell Asmar. Internal windows were also reported from houses in the 'Semitic Quarter' at Bismaya (ancient Adab), though little else is known of the construction of these houses (Banks, 1912, 304).

Stratum Va (ascribed by the excavator to the 'Proto-imperial' period) provides the largest excavated area of housing at Tell Asmar (fig. 135; Delougaz, Hill and Lloyd, 1967, 166); an area on the south-east side of the Middle Road, bounded by roads on the east and south, was excavated in addition to the strip along the north-west side. The roads were planned and remained constant, while the smaller streets and houses could be altered. The largest houses border on the roads, especially on the East and South Roads, while a number of narrower streets and lanes led to the smaller houses in the centre of the blocks. The houses range in size from two or three rooms (e.g. Houses 5, 8, 12, 13) to ten or more (e.g. Houses 1, 2 (the Arch House), 20, 22 and 25), or from 43 metres^2 to 248 metres^2 in area. In several cases it is clear that a large unit has been subdivided to make several smaller ones, e.g. Houses 10, 11 and 12, but most of the houses, however small, have at least one sizeable rectangular room and some, like Houses 6 and 11, probably had courtyards as well. Apart from Houses 17 and 25, which were probably shops, each house had only one entrance and in most cases care was taken in the positioning of street doorways so that passers-by could not see into the rest of the house. Room doors were usually positioned towards one corner.

Although the economical use of space within the blocks might suggest that land was at a premium, there were two open spaces within this level; in the north, where the ruins of House 7 were not rebuilt, and in the south-east where the unroofed enclosure 9 sheltered an oven. It should be borne

in mind that not all the houses were necessarily occupied simultaneously; small houses or parts of larger ones may have been used for stabling or storage by other households as they fell into disrepair. Of the two houses with two entrances, House 17 may have been a shop with a workroom or storeroom behind, while the large House 25 is quite clearly divided between the domestic quarters with their separate entrance and the shop itself, which contained two rows of bins of unbaked clay .40 metre square, the inner row being raised slightly above the outer. This arrangement is strongly reminiscent of food shops in Iraqi towns today, and although later texts indicate that major markets were held outside the city walls it is hardly credible that no retail activity took place within large towns. Both here and at Mari there is evidence of the existence of small shops, probably selling fresh produce and foodstuffs such as the dried pulses which formed an important part of the Mesopotamian diet.

The Arch House of Stratum Va (fig. 134) is almost identical to that of Vb, having undergone a gradual process of repair rather than any drastic rebuilding. The only major change is the movement of the entrance from J19:52 to J19:41, so that the five rooms on the north became a self-contained unit which like other rooms at one remove from an open space must have posed problems of lighting and ventilation. Where such rooms bordered on a street small windows set high in the wall would have served the purpose; otherwise, clerestory lighting has often been suggested as the solution, necessit-

ating varying heights of roof. The drainage of a mud-plastered roof requires some skill - too steep an angle and the rainwater will scour off the surface, too shallow and it will collect in pools - and the difficulty of arranging the drainage of large areas is another argument in favour of courtyards.

Stratum 1Vb, the earlier of the two Akkadian levels, represents a period of abandonment and decline at Tell Asmar (Delougaz, Hill and Lloyd, 1967, 171). Above Va there was a layer of debris over the entire area except the Arch House and Houses 10 and 11. The area south-east of the Middle Road was for the most part unoccupied, though some walls stood throughout the period to serve as foundations for walls of Stratum 1Va, and the house area as a whole was probably smaller than in the lower strata, following the trend revealed by surveys of the Diyala region as a whole at the end of the Early Dynastic period (Adams, 1965, 43). The walls of 1Vb are slighter than those of earlier levels and are of flat bricks.

The Arch House of 1Vb (fig. 134) had declined somewhat in area but had acquired a lavatory in J19:44, the first of its kind in this area of Tell Asmar, although a number had already been found in the Northern Palace and nearby houses of late E.D. date. This example was ruined but the room had baked brick paving and a drain leading to the outside. The area investigated reaches north-west to the North Road but there are several open spaces including one occupied by

possible animal pens and feeding troughs, four tannurs enclosed by a screen wall, and a kiln-like oven, perhaps the site of a bakery. The general air of poverty in this level is reinforced by the pit excavated in K19:25, in which a flight of seven steps led down 1.80 metres to the floor; it was suggested that this had been a dwelling like the modern sarifah, which consists of a hole in the ground roofed with mats or palm branches and is generally used for temporary accommodation only.

There seems to have been some improvement and expansion in the house area in Stratum 1Va, the later Akkadian level (fig. 136; Delougaz, Hill and Lloyd, 1967, 174). Individual houses are larger than before, with several examples of double houses with more than one courtyard, although there is a suggestion of troubled times in the finding of several caches of valuables and traces of burning in some houses. Houses 10 and 11 have been thrown together to make a single house again; room J21:1 contained tools and objects which indicated that it had been a stone-cutter's workroom. House 37 across the lane had more than one entrance and may have been a shop or a khan, continuing the tradition of commercial activity in this area. In the area of the bakery of the previous level there now seems to have been a smithy, J18:1, with a specially-constructed hearth and a row of bins along one wall.

The Arch House of this level is at its greatest extent, with the original courtyard in J19:21 being supplemented by

a second in J19:3 (fig. 134); to the north-east and separate from the rest of the house is a third section, with five rooms opening off the courtyard K19:3, whose size suggests some special function such as stabling. The Arch House is not the only house of this level to have consisted of several different parts; Houses 33 and 34 were joined at one point and House 32 is in effect two houses, each built around its own courtyard but communicating via a door (which had a door-socket and could therefore be closed) from room J18:14, a domestic chapel, to room J18:20. This arrangement may reflect the more tribal society of the Akkadians; on the other hand, it may be another product of the insecurity of the period, with householders co-operating for self-defense.

The north-eastern part of House 32 was unique for this or any other level in being provided with not one but two lavatories of a type similar to those found in such astonishing numbers in the later Northern Palace; that in room J18:4 was particularly well-preserved. The room was paved with baked bricks coated with bitumen and the lavatory was placed in a shallow recess cut into the walls in the south corner of the room, its position probably being fixed by that of an earlier drain. The seat was built up of baked bricks five courses high, with a slot .10 metre wide running through the middle. Below the slot was a hole about .12 metre square in the paved floor, beneath which was a carefully-fitted clay pipe with an opening .12 metre in diameter, set into an opening in the covering of the uppermost section of a vertical baked clay drain .57 metre in diameter, made in sections

.32 metre long. The joint between the mouth of the pipe and the bricks of the hole was smoothly caulked with bitumen and the seat was also coated with bitumen (more properly bituminous mastic; as was explained in Chapter 1, unadulterated bitumen is somewhat too adhesive for such a purpose) and protected at the back and sides by a ridge of the same material.

This sudden interest in sanitation bears the signs of an exotic import, especially in the later Northern Palace where the large number of these installations, draining into a brick vaulted sewer in the street outside, has led to the suggestion that they were intended for the disposal of industrial waste, and that the building was a factory of some kind (Delougaz, Hill and Lloyd, 1967, 196), although finds of toilet accessories and personal ornaments support a residential interpretation. The source of the idea was probably the Indus Valley civilisation, and it may be no coincidence that an Indus Valley seal was found in the North Road of lVa. Excavations at Mohenjo-Daro revealed that considerable attention was paid to drainage and the disposal of waste water; well-built covered brick channels ran down the streets and most houses had a privy which emptied through a chute in the wall into the street drain or a cess-pit. The usual privy consisted of a hole in an area of paving surrounded by bricks on edge, but some have two brick supports with a central hole, though these are lower than at Tell Asmar (Mackay, 1938; 1937, Plate Xll). The first baked brick lavatory of Tell Asmar is from a house

contemporary with the beginning of the last phase of the Indus Valley civilisation; the fashion persists into Stratum 111, which is the last level to produce more than fragments of housing and dates to the period of Gutian rule, when there is again one in the Arch House. The phenomenon seems to be confined in the Diyala region to Tell Asmar and may be the result of a single trading venture by an enterprising Eshnunna business house, but there is a similar installation at Tello (Cros et al., 1910, 105), and it is part of a growing tendency in the later Early Dynastic and Akkadian periods to equip ordinary houses with washing areas or bathrooms paved with baked brick and provided with drainage. One of three houses opening off a narrow cul-de-sac in the Scribal Quarter at Nippur contained a bathroom with baked brick paving; an edging of baked bricks protected the wall against splashes (McCown, Haines and Hansen, 1967, 42). These are small irregular houses of only three or four rooms; in the other rooms the floors were no more than concentrated layers of ash and debris, and although this may have been to combat dampness rather than on account of uncleanliness, their fittings, size and construction combine to give the impression that these are houses at the lower end of the scale. This growing preoccupation with washing and drainage facilities may be the inevitable consequence of increasingly crowded cities. Private houses were built right up against the Early Dynastic town wall of Tell Asmar (fig. 133), and soundings revealed dense housing on other areas of the mound.

Northern Mesopotamia.

There is no long series of housing in northern Mesopotamia to compare with the Diyala sites. At Tepe Gawra the top of the mound was occupied in Stratum VIII by three phases of primarily religious and administrative buildings (Speiser, 1935, 22), which span the latest prehistoric and earliest historic periods. In the last of these, VIIIA, the excavator considered that both the building in O-Q9 facing the Central Shrine across a paved open court and the more impressive building across the street to the south-east were private dwellings (fig. 137). The building opposite the Central Shrine is built on a site which was occupied by temples in the two preceding levels, and though irregular in plan has regularly-arranged niches on its south-western and south-eastern outer walls. Like the building in K7-8 of this and the preceding level it bears some resemblance to the tripartite houses of the Uruk period, but both buildings would be exceptional among such houses in having a direct and centrally-placed entrance into the central room. It is possible that the O-Q9 building was a priest's residence like House D at Khafajah. The building in squares M-K 8-9-10 is unlikely to have been a house; it is surrounded by a substantial enclosure wall, forming a court in front of the building and a vaulted hall, spanned by a true arch, on its south-western side. The plan of the building closely resembles that of the Central Shrine and other sanctuaries in previous levels with a deep porch or iwan opening centrally into a large rectangular room and smaller rooms on either

side of the iwan. The formality of the plan with its centrally-sited entrance and resemblance to other buildings identified as sacred is more consistent with some official function, administrative if not religious, than with domesticity. The building across the street forms a more plausible house, with facing doorways opening off either side of the central room in an irregular version of the Uruk house, which would thus have survived into the Early Dynastic period in the north.

Stratum Vll yielded only fragments of walls, and the last level of Tepe Gawra to produce substantial remains was Stratum Vl, dating to the late Akkadian or post-Akkadian period (fig. 138; Speiser, 1935, 18). Here a number of small-roomed buildings of mud brick on rough stone foundations were grouped around an open space 17 x 28 metres; because many walls had been eroded down to their foundations it was in many cases impossible to recover the positions of the doorways and it is thus difficult to distinguish different units. Rooms were often paved with small flat stones. There are no signs of courtyards, and the plans of these buildings are more reminiscent of prehistoric houses in the north than of contemporary houses in the Diyala or at other northern sites. In view of their smallness and the solidity of their foundations it is possible that the houses were two-storied. There were apparently two routes up the mound, one in the south and one in the east, guarded by a putative watch-tower. The houses were reached by stone-paved alleys, in some cases with central gutters walled and roofed with flat

stones; there was also a stone cistern in the open space on the south-east. The only readily identifiable unit, in J-K 6-7, contained a great concentration of finds, including seals, beads and copper and baked clay objects; its plan, with small rooms opening off either side of a central corridor, immediately suggests storage, although the rooms on the south-eastern side are big enough to have been used as living-rooms, and this building may represent a merchant's home and business premises.

The houses from other northern sites of the period are of a more familiar type. At Mari a housing quarter of E.D. III date was excavated east of the Ishtar Temple (fig. 139; Parrot, 1956, 48). A broad street runs north-west/south-east across the area, with a narrower lane opening off to the north-east; like other streets at Khafajah or Tell Taya it has one rounded and one sharp corner. On one side of the lane is the only complete house of the level, a fairly sizeable if irregularly-shaped dwelling planned around a central courtyard; like House 32 of Houses 6 at Khafajah or House VIIu at Fara, it has a long narrow room at the back of the house, at one remove from the courtyard. On the other side of the street there was an open space into which opened a double row of rooms with a row of pillars in front, possibly representing the colonnade in front of a small row of shops. The houses were built of mud bricks, often topped by pisé, and interior walls were sometimes whitewashed. Graves within the houses took the form of simple linen or hide-wrapped burials accompanied by grave goods such as jewels,

cylinder seals and weapons. There was an elaborate drainage system around the temple and the houses were provided with vertical baked clay sectional drains or partly-covered stone channels leading to collecting sewers in the street. In another area of the city a six-roomed house known as the 'maison rouge' was excavated; it was thought to have been the house of an important citizen, and opposite the entrance was a small square with two rooms which Parrot suggested were sentry-boxes sheltering guards for the house (1955, 199). The entire quarter had been pillaged, but only this house had been burnt, perhaps voluntarily; the circular house model discussed above was found in a street in this area. The 'maison rouge' was carefully built with a more or less rectangular plan; the rooms were arranged on three sides of a small courtyard equipped with benches. The street door opened into the kitchen from which a mud brick staircase with plank treads led to the roof, while north of the kitchen was a small paved room from which a drain led to a sewer in the street; finds from the house included three barley ration tablets. Like the area east of the Ishtar Temple, this residential quarter with its open squares and broad well-drained streets shows more signs of planning or of co-operation among the citizens than at Tell Asmar, perhaps because it was a wealthier and more important city. In most respects, however, the domestic architecture of Mari clearly belongs to the southern tradition.

The houses excavated at the Syrian site of Tell Chuera differ in details of planning, internal fittings and con-

struction from houses in the southern towns, although they have some features such as orientation and the central courtyard in common. They have been dated by their excavator to the Late Mesilim period, perhaps late E.D. 11 - early E.D. 111 (Moortgat, 1960, a, 32 and b, 2). Three complete houses (A, B and C) were excavated on the south-western side of a north-west/south-east-running street (fig. 140). A channel down the centre of the street into which drains from the houses on either side emptied was a major source of small finds. The houses were built of mud brick and though irregular in plan consisted of rooms grouped around a central courtyard. Some of the courtyards were partly paved with pebbles, and rooms were often floored with gypsum plaster, a material also used for various installations connected with water. House A was entered through a vestibule with a niched doorway at either end, but several other courtyards were entered directly from the street. The largest room of House A, Room 2, was equipped with a niche, perhaps for storage, and benches; Room 3, with a niche and a basin of gypsum plaster, was perhaps a bathroom, while Rooms 5, 6 and 7 contained circular hearths and ovens. House B was originally supposed by Moortgat to be some kind of shrine; the main room, Room 1, which was carefully plastered with gypsum, had a podium reached by two steps in the middle of the northern end wall and benches round the remaining walls, while Room 2 had a complicated system of gypsum basins and channels thought to be for libations. Further excavation, however, revealed that the houses on the other side of the street had podia similar to that in Room 1, so it seems that they were

a standard piece of domestic equipment, and the complicated installation in Room 2 may have been simply for washing. The manipulation of water was apparently of special importance at Tell Chuera. All the houses were provided with drains, plastered with gypsum and partly roofed with stone, leading either to the central channel in the street or, in the case of House C, to a soakaway with a covering grille of baked clay.

In another area of Tell Chuera, below the Steinbau of level V, two buildings were found which, although not unlike ordinary courtyard houses in plan, had apparently been centres of large-scale pottery production and other commercial activities (Moortgat and Moortgat-Correns, 1978, 55). Building B in the northern part of the area contained eight kilns in all, and large quantities of pottery, kiln-wasters, slag and trivets left no doubt about their function. Building A to the south was apparently also a workshop involved at least in part with the production of pottery. In addition to large numbers of pots including kiln-wasters, the building contained copper ingots, flint implements and a hoard of baked clay figurines, the stock of a varied trading enterprise. This commercial quarter was extensive and the unexcavated portion continued under the Steinbau V. Its discovery throws interesting light on the degree of commercial specialisation achieved at Tell Chuera and it is paralleled at another northern site, Tell Taya, where concentrations of kiln-wasters on the outskirts of the city indicate the sites of other potters' quarters. No such quarters have yet been

found in the walled towns of the south, either because industrial areas were situated outside the walls or through the accidents of excavation, although isolated workshops like the stone-cutter's house in Stratum lVa at Tell Asmar are known.

The town plan of Tell Taya (fig. 141), near modern Tell 'Afar in the Jezirah, has been recovered by planning the stone foundations that appear on the surface over an area of about 70 - 160 hectares, most of the excavation being concentrated in the area of the citadel (Reade, 1968, 234; 1971, 87; 1973, 155). One of the few houses excavated was a mansion in the central area of the town with more than thirty rooms (including two courtyards), probably the residence of an important official who required servants' quarters in addition to public and private suites (Reade, 1971, 94). A more run-of-the-mill dwelling was excavated in the outer town (fig. 142; Reade, 1971, 97); like the other buildings at Tell Taya, it was built of mud bricks on stone footings, although the walls were thinner and the mud bricks of poorer quality than those of most buildings. Another house adjoined to the west on the same narrow east/west-running street, into which a drain emerged through the front door. The plan is the usual arrangement of a double or single range of rooms around a central courtyard, although the house was unusual in that, unlike houses at other sites (with the exception of the XV ad houses at Fara), the corners are not aligned to the cardinal points; throughout the settlement as a whole, the majority of buildings in the eastern part of

the settlement, especially the small private houses, are orientated in this way, but the houses on the west of the town, and some of the larger buildings, are orientated with their sides to the cardinal points.

A quantity of pottery and stone implements on the floor of the room in the north-west corner of the house indicated that it had been used as a kitchen, and there were two probable cess-pits in the south-east corner of the courtyard. Two of the rooms on the eastern side of the house had contained cellars, dug .80 metre into the gypseous rock and divided by a stone partition wall. Steps led down to the outer cellar, in which were found storage jars and a naked female statuette. The inner cellar, down another step, had a potstand in the centre of the room opposite the entrance to a tomb in the north wall. The tomb had been hollowed out of the bedrock and contained three successive burials, each with accompanying grave goods. The pottery with the earliest burial included types unlike other Taya pottery and may represent the earliest ceramic tradition on the site, of uncertain origin, which did not survive for long after the town's foundation. The remaining pottery in the tombs, like that from floors throughout the house, is related to pottery of level lX on the citadel, probably to be dated to the later E.D. lll. The house had undergone some alterations, but there was no great accumulation of debris on the floors and the small number of burials in the family vault suggests that the house was probably in use for little more than a generation.

Unlike the sites encountered so far, Tell Taya outside the inner town was a flat, unwalled settlement (fig. 141). In the centre of the site was a mound on which was built the citadel, with a massive circular buttressed wall about 51 metres in diameter enclosing an area of religious as well as defensive importance. This represents a continuation of a long tradition of circular Early Dynastic (and earlier, if the Round House at Tepe Gawra is included) defensive structures. At least three round fortress-like structures have been excavated in the Hamrin valley; at Tell Razuk a circular mud brick building 27 metres in diameter with a vaulted roof and central courtyard was surrounded by rectilinear houses which radiated outwards to a mud brick town wall. The building contained weapons, tools and pottery of E.D. 1 date (Gibson, 1977, 45).

On the west side of the mound of Tell Taya was the inner town, a roughly semi-circular area of about 3.5 hectares enclosed by the stone foundations of the inner town wall, with a gate on the west. Outside the walled town the settlement divided itself into the relatively densely settled central area of about 65 hectares and the outskirts, about 90 hectares of more scattered building. The solid lines formed by the outer walls of houses (e.g. in squares Ty and Vx) could have provided defense, though to be fully effective they would have required an open space in front, a provision which may have been superseded if, as seems likely, the town was built in layers, radiating outwards from the central walled area. There are four

points on the edge of the densely settled area (e.g. U - V bb) where streets seem to have been blocked by curving walls. The major roads spread outwards from the walled town, joined crosswise by smaller streets, on several of which the phenomenon of the single curved corner is again encountered. At Tell Taya the curve is usually on a south-western-turning corner, although there are one or two instances of a curve on a south-eastern turn (e.g. squares Z and AAs or Tcc) or on a north-eastern turn (e.g. square Wx). No sensible explanation springs to mind, since it would appear that if rounding one street corner to prevent damage to building and traffic was a good idea, rounding both corners would be twice as good. It seems highly improbable that Early Dynastic cities were already operating one-way systems.

Entrances to houses are sometimes set back or flanked by unusually thick walls. Some are entered by blind alleys whose entrances are flanked or partially blocked by thick walls in a manner which suggests that, like the lanes of Habuba Kabira, they could be blocked at night.

There are several large units with thick walls and wide ranges of rooms around central courtyards (e.g. square Ws) connected to the central town by broad streets, perhaps official establishments of some kind. Industrial activity is represented by areas of kiln debris and kilns, the work-places of specialised potters, although here in contrast to Tell Chuera they are relegated to the outskirts of town;

there are also flint-knapping areas and a large empty enclosure by a wadi in square Y which may have housed an industry such as dyeing, tanning or brewing which required large quantities of water. There are also two massively constructed oblong buildings which are probably shrines.

Although the extent of the area planned is impressive, details vanish on closer inspection. It can however be seen that there are three levels of building; firstly the large complex of rooms enclosed on one or all sides by single walls, up to 25 or 40 metres long; secondly, the courtyard house, often 15 to 20 metres square, and thirdly the small house with only a few rooms. The second and third types are often obtained by subdividing a larger block, in the same way as courtyard house plots at Tell Asmar were sometimes divided into several smaller houses. Perhaps the blocks represent the original allocation of space per family when the town was founded, starting life as empty complexes like those on the outskirts of the town and becoming built upon or subdivided as the numbers and fortunes of the family grew or declined. Too little is known of the circumstances in which the town was founded and grew or how the society and economy were organised for this to be more than a guess, but the pattern of settlement at Tell Taya provides the only parallel for the possible enclosures at Abu Salabikh, much earlier. It is clear at Tell Taya that the division into blocks was not a rigid one and that considerable variation in house forms and sizes was achieved, reflecting the range of wealth and numbers of occupants, so that if the land was

originally allocated on the basis of extended family units, many of these soon fragmented. This is no more than might be expected, especially if a system of inheritance prevailed which decreed equal division between all the sons or children of the deceased. Under such a system, as suggested in the last chapter, occupation by several siblings of the same house helps to counteract fragmentation of the estates. If the inheritance is small or non-existent in the first place, it may be more convenient and practical for the siblings to occupy smaller houses of their own.

Many of the inhabitants of Tell Taya must have depended on agriculture for at least part of their livelihood. The large enclosures on the north may have been used as pens for animals, or perhaps as gardens and orchards; the occasional small rooms in these could have been huts for guards, or perhaps cabins in which the owners escaped from the summer heat in the same way as some modern Iraqi villagers sleep in shelters of reed mats and palm branches in the fields. Animal remains reveal that hunting also played an important part in the economy.

Reade (1973, 162) estimates a population of between 16,000 and 25,000 for Tell Taya, based on calculations of the area of good agricultural land which was available to the town, or with an estimated population density of 100 per hectare over the town's built-up area (see Adams and Nissen, 1972, 30). The calculation of population density is a difficult subject, especially within urban centres so

large that only a fraction can be excavated, leaving the proportion of housing to public buildings, waste ground, gardens and orchards to be guessed at. At the level of the individual house, the process of arriving at a figure for the number of occupants is more likely to be based on opinion than on fact, since as Chapter 2 showed knowledge of the ancient Mesopotamian demographic system is slight. Modern surveys reveal considerable variation in numbers of occupants per house among villages in different areas of the Near East, variations which probably reflect differences in wealth and degree of modernisation. The villages of the Khabur region of Syria, for example, appeared to be more affluent than those of the Iranian Zagros or southern Iraq. In both areas, however, the number of living-rooms per house provided some guide to the number of nuclear families, since although activities such as cooking are shared it seems generally to be considered desirable that each married couple and their unmarried children should have a separate room in which to sleep.

Unfortunately the difficulty of differentiating between rooms creates problems in applying this indicator of household size to ancient houses. In modern villages a room may change from living-room to storeroom and back again as circumstances require it without any structural changes, and with little or no record of finds from individual rooms in ancient houses it is difficult to determine their functions, especially if, as now, any one household activity could take place in several different parts of the house. The plan of

Stratum Va at Tell Asmar shows that in the great majority of the houses there is at least one room large enough to sleep several adults, i.e. about 2 metres in width by 2 metres or more in length; in modern houses this would be the room used for the reception of guests, but since there is no evidence that the Sumerians or even the pre-Islamic Semitic peoples of Mesopotamia shared the modern Arab attitude towards hospitality (Oates, 1977, 478) this can simply be described as the main living-room of the family. On this basis, some of the smaller houses of Va (e.g. 5, 8, 10 and 11) may be identified as the dwellings of single nuclear families. The larger houses pose greater difficulties; in the Arch House of this level every room except the vestibule could qualify as a living-room, and there are other houses with several possible living-rooms. A calculation based on the identification of nuclear or extended family dwellings by living-rooms (excluding incomplete houses) shows that 12 extended family houses represent about 78% of the houseing by area, 8 nuclear family houses about 22%. Translating this into numbers of occupants is more difficult; an estimate of 4 - 10 occupants (based on the range indicated by the evidence quoted in Chapter 2) for each of the thirty or so living-rooms would give a range of 120 - 300 inhabitants for the quarter, whose total excavated area was about 2,500 metres^2; this is not unduly high if one considers that houses cover most of the area and this density would not be maintained over the city as a whole.

Attempts have been made to describe the structure of Sumerian society on the basis of documentary evidence. Such attempts, however, must take into account the archival nature of the sources if a distorted picture of Mesopotamian society is not to be presented, like the classic reconstruction of Sumerian society as a theocracy dominated by temples with a virtual monopoly of landholding, which arose from misconceptions about a single archive. Current perceptions of Sumerian society proceed mainly from the research of Gelb (1967; 1972; 1979) and Diakonoff (1959; 1972), and it is necessary to summarise briefly their somewhat contrasting ideas of Sumerian society before attempting any sociological comment on the archaeological evidence for domestic architecture in the third millennium B.C.

Gelb's viewpoint is best expressed in his own words: he envisages Mesopotamian society as having a 'thin master class at the top, composed of the ruler, nobility, "priests", and merchants, a thin class on the bottom, composed of slaves employed as service labour in a menial, domestic capacity, and the mass of serfs (guruš) in between, who represented the main productive labour employed in agriculture and processing of agricultural goods on large public households .... it has been my personal belief that free peasantry and craftsmen constituted a negligible force in the productive effort of ancient Mesopotamia' (1972, 92).

Diakonoff's view of the structure of Early Dynastic society differs from Gelb's, although the two have sometimes seemed to be converging. Both writers have rejected the idea that the economy was completely dominated by the temple, and have emphasised the simultaneous existence of independent socio-economic units. According to Diakonoff, alienable land belonging to free members of the community existed alongside temple land from the start (1959, 8 - 9). The population of Sumer was divided into men dependent on or receiving land from the king and temple on condition of service and men enjoying full citizen's rights and having a part in community land or owning private property, the free community members being organised in large patriarchal families or family communities. Diakonoff estimates that probably at least half the population shared plots of land in family ownership, and assumes that work on the estates of the temples and hereditary nobility was done by clients, slaves, playing an apparently minor role. The extended family commune typical of the 'private' sector was, however, eventually superseded, at least in the cities, by individual private households, starting from the richer strata (1972, 48).

Gelb discounts the role of the free peasantry and of tribal-owned land in historical times, although granting that they may have played an important role in prehistoric and proto-historic periods and in periods of changing economy (Gelb 1972, 90). On the other hand, he believes that the

basic unit of agricultural production was the self-contained household, or 'oikos' community, which consisted of the real estate, the people, the animals and all other movable property; in addition to the public households of palace and temples, there were private households, belonging to the large landowners, who also served as officials of the state (1976, 6). Small peasantry living in the country formed part of the oikos communities, and outside small settlements of shepherds and semi-nomadic people, there may have been no villages of independent peasants (Gelb, 1979, 4).

The Sumerian term é (Akkadian bîtum), translated by Gelb as 'household', covers a range of social groupings from the small family household living under one roof to the large, self-contained oikos community. Gelb finds evidence of a state of society in which an individual and his household could be socio-economically dependent on a higher-standing individual and his household. Unfortunately, information about private - individual households is limited, being mainly derived from documents dealing with the transfer of land property, and although there is evidence from sale contracts of the early Akkadian period for family-owned land and large kinship or 'clan' groupings, it is difficult to know to what extent shared rights of inheritance of family land corresponded with shared residence (Gelb, 1979, 81 - 88).

In considering this work it is important to bear in mind Oppenheim's expressed concern at the problems inherent in reconstructing Mesopotamian society from textual evidence, which concerns itself mainly with the non-free segments of society and rarely mentions 'those who are neither slaves nor members of the extensive household organisations of temple and palace, who are neither confined to specified manual activities nor subject to legal, residential or other restrictions' (1967, 2). Administrative documents provide evidence about persons with restricted freedom, and information about 'free' persons is available only rarely and often in uncharacteristic contexts. Archaeological evidence, on the other hand, does not discriminate between the free or the non-free, and although the information it provides may sometimes be obscure or indirect it has the advantage of enabling us to draw a more complex picture of ancient society than would be possible from the cuneiform sources alone.

As far as matching these text-based reconstructions of society with the archaeological evidence provided by private housing is concerned, the wide range of household sizes accords better with Diakonoff's view of a free community organised in large patriarchal families (1959, 38), owning plots of land which could be subdivided or increased at the expense of other families, than with Gelb's sharp contrasts, as outlined above. There is evidence at Early Dynastic Tell Asmar (Delougaz, Hill and Lloyd, 1967,

151 - 174) in the subdivision of house plots of the fragmentation of family units and perhaps a tendency towards private ownership. This appears to have been reversed in Akkadian times, when houses became large and intercommunicating. Figures from Stratum Va, the latest Early Dynastic level, indicate that 40% of the dwellings housed nuclear families in 22% of the housing by area; this would have represented 27% of the population. The fact that many households consisted of small nuclear families would not necessarily have detracted from the importance of kinship groupings, especially if Gelb is correct in suggesting that smaller households may have existed as clients of larger households to which they were related by kinship ties.

It has often been said that the ancient Mesopotamian city lacked the right social and economic stratification which often produced tensions in European cities in the past (c.f.Oppenheim, 1967, 9), and there is certainly little evidence in the residential quarters of ancient cities that the more affluent citizens felt it necessary to live in separate areas. Throughout successive levels of Early Dynastic Tell Asmar large, regularly-planned houses rubbed shoulders with smaller, irregular dwellings which were presumably occupied by the poor, and the same is true of the later, Larsa period house quarter at Ur.

Texts, most of them admittedly rather later than this

period, describe a city as consisting of city, suburb and 'harbour' (karum) and according to Oppenheim overland trade did not cross the city walls; the 'harbour', where the city merchants came into contact with foreign traders, was separate from the city itself (1967, 10 - 14). The city not only lacked the focal point provided by a central market as in Islamic towns, but even, Oppenheim argues, any industrial production outside the temple and palace, and in the absence of markets for food and dry goods which would create work for craftsmen and opportunities for self-supporting strata of the population, free artisans and skilled workers would have played a minimal role.

The evidence of E.D. - Akkadian housing areas suggests that this view is slightly exaggerated. Stratum Va at Tell Asmar had two possible shops, 17 and 25, each distinguished from ordinary houses by having two doors, one for customers and one for the household. In 25 the shop entrance led into a room containing a double row of clay bins suggestive of a modern food store. In Stratum IVb an open space in J18 contained a number of installations, including four tannurs and an oven, which may have been the site of a bakery. The same area was occupied in IVa by a metal-worker's shop, while in the area of the shop 17 of Stratum Va there was another building with two entrances which the excavator suggested might have been a khan. House 10 - 11 of IVa included a stone-cutter's workroom. At Mari, in the housing area east of the Ishtar Temple,

there was a small open space onto which opened a double row of rooms with pillars in front, an arrangement reminiscent of an arcade of small shops (Parrot, 1956). Tell Chuera (Moortgat and Moortgat-Correns, 1978) and Tell Taya (Reade, 1968; 1971; 1973) both produced unequivocal evidence of fairly large-scale industrial production and commercial specialisation, indicating a rather different economic and social structure from the cities of southern Mesopotamia (including Mari).

The archaeological evidence thus implies that independent commercial and craft activity did exist in Early Dynastic and Akkadian cities, and although it may seem to be very small-scale it should be borne in mind that the excavated housing areas represent only very small fractions of the cities to which they belong; in the case of Tell Asmar, the proportion of excavated to overall city area is not known, as the early city walls have not been traced. We do not know to what extent individuals attached to palace or temple derived all or part of their income from these institutions or whether they had time to follow other pursuits; the amount of information on the economic life of individuals not connected to either is still more limited. It is hardly remarkable that archaeology reveals a more diversified society, with small households venturing into independent trading, than is attested by the texts.

TABLE 4: SOUTHERN SITES

Khafajah:	Houses 6	House 32	310 metres^2
		House 33	112 metres^2
		House 34	184 metres^2
	Houses 5	House 35	310 metres^2
		House 36	112 metres^2
		House 37	180 metres^2
	Houses 4	House 38	c. 300 metres^2
		House 39	63 metres^2
		House 40	253 metres^2
	Houses 3	House 41	310 metres^2
		House 42	65 metres^2
		House 43	280 metres^2
	Houses 2	House 45	356 metres^2
		House 46	528 metres^2
	Houses 1	House 47	100 metres^2
		House 48	119 metres^2
		House 49	95 metres^2
		House 50	141 metres^2
		House 51	88 metres^2
		House 53	83 metres^2
	Temple Oval	House D	800 metres^2
Tell Asmar:	Stratum Vc	House 1	156 metres^2
		House 2 ('Arch House')	196 metres^2
		House 3	66 metres^2
	Stratum Vb	House 1	140 metres^2
		House 2 ('Arch House')	232 metres^2
		House 5	79 metres^2
		House 6	84 metres^2

Table 4: Southern Sites (cont.)

Tell Asmar:	Stratum Va	House 1	140 metres^2
		House 2 ('Arch House')	242 metres^2
		House 5	48 metres^2
		House 6	82 metres^2
		House 8	44 metres^2
		House 10	54 metres^2
		House 11	60 metres^2
		House 12	52 metres^2
		House 18	43 metres^2
		House 20	136 metres^2
		House 22	132 metres^2
		House 25	248 metres^2
	Stratum lVb	House 2 ('Arch House')	216 metres^2
		House 10	54 metres^2
		House 11	68 metres^2
		House 30	48 metres^2
	Stratum lVa	House 2 ('Arch House')	420 metres^2
		House 10-11	124 metres^2
		House 32	234 metres^2
		House 33	132 metres^2
		House 34	191 metres^2
		House 35	50 metres^2
		House 36	188 metres^2
Fara		House in Vllu	c. 230 metres^2
		House in Vla-k	c. 150 metres^2
Nippur		House K	50 metres^2
		House L	70 metres^2

TABLE 4: NORTHERN SITES

Mari	House east of Ishtar Temple	165 metres^2
	'Maison rouge'	122 metres^2
Tell Chuera	House A	154 metres^2
	House B	163 metres^2
	House C	155 metres^2
Tell Taya	S 1 House	187 metres^2
	W 1 Mansion	>682 metres^2

CHAPTER 6

The Ur III, Isin-Larsa and Old Babylonian Periods.

In contrast to preceding periods, almost all the evidence for housing and town planning in this era of Mesopotamian history comes from southern sites (fig. 143). Indeed, any discussion must be dominated by the evidence from Ur, where Woolley excavated and vividly interpreted extensive areas of mainly Larsa period private housing. Substantial house areas have also been excavated at Nippur, however, and there is additional evidence from several other sites in the southern alluvium. The north, on the other hand, is barely represented; there are two dubious houses at Aššur and a few fragments from elsewhere, like the partly-excavated house with central courtyard at Chagar Bazar (Mallowan, 1936, 14).

If the material is geographically unbalanced, it is also chronologically unbalanced, with most of the material dating from the later part of the period. At Tello (ancient Girsu) a building originally identified by de Genouillac as a temple of Nanshe (1936, 14) was re-interpreted by Parrot as a private house, probably of Ur III date (1948, 276; fig. 144). According to Parrot, the private houses of Tello had walls of mud brick with faces of baked brick, but were rarely of baked brick throughout. In most houses the foundations were of baked brick, with a depression in the centre to provide a seating for the mud brick superstructure. Walls

were plastered inside and out with a plaster of mud mixed with chopped straw, and occasionally rooms were whitewashed. Areas which were subjected to hard wear such as door-sills and drains were protected with baked bricks, and in the centre of the courtyard there was often a baked brick pavement around the central drain, but most floors were of beaten earth over which mats were laid. Lavatories with a central slot similar to earlier examples at Tello were found (Cros, 1910, 105) but they were lower than those at Tell Asmar (see Chapter 5).

The houses were packed closely together along streets and alleys, with from time to time an open space enclosed by bare walls. No overall plan has been published, however; the single house illustrated is large, 294 metres^2 in area (see Table 5), but the plan is familiar, with a single entrance leading through a vestibule to a court surrounded by a single range of rooms on three sides and a double range on the fourth. There is no sign of a staircase and as in most of the houses at Tello there was probably only one storey. The room at the back of the house, farthest away from the entrance, seems to have been a domestic chapel similar to those recorded from Ur: the walls were niched, there was an offering-table of some kind in the north-west corner, and beneath the floor were three graves, one containing two newly-born infants, the second the remains of three children, and a third containing as many as ten children. Five more graves were found beneath various other rooms of the house.

This house may be compared with other Ur III houses from the TB area in the Scribal Quarter at Nippur, where House J survived without major alterations from Level IX to Level V (McCown, Haines and Hansen, 1967, 44 - 50; Pls. 53 - 57). As fig. 145 (A and B) shows, House J was very large indeed; in Levels VIII (fig. 145B) and VII it was just over 500 metres^2 in area, and as reconstructed, with an extra range of rooms on the north-east (indicated by doorways found there), it would have had an area of c. 670 metres^2. The house of Levels VIII and VII was in three parts, each of which probably had its own entrance. The north-western part centred on the courtyard locus 269, which in Level VII had an area of baked brick paving around its central drain and a tannur in the west corner. Locus 268 may have been the entrance-lobby for this part of the house, which included most of the larger living-rooms (loci 267, 275, 270 - 283 and 287). Loci 270 - 283 and 287 seem to have been used for cooking; in Level VIII there was an oven in 270 and in Level VII 283 contained a hearth and an open cooking-place, while 287 was equipped with an oven, two open cooking-places, a 'stove' (formed by two baked bricks .15 metre apart) and a vertical drain in an area of baked brick paving. The middle of the house centred on courtyard 277 - 284, which was unfurnished in most levels; in Level VII there was a mud brick bin against the north-west wall. The entrance to this part of the house was most probably through 286 and 282, which would otherwise be large enough to qualify as living-rooms; 278 contained two drains in Levels IX and VIII and was partly occupied by a drain and an area of

paving in Level VII. The size of the rooms to the north-east can only be guessed at. It seems most likely that the central part of the house in Levels VIII and VII existed mainly as a service area, accessible from the northern, residential part of the house, from the outside, and from the southern, formal part of the house; it formed, perhaps, the servants' quarters.

The south-eastern part of the house centred upon locus 281, which the excavators considered to have been roofed, and which was probably entered through 289. In Levels IX - VII the centre of the room was occupied by a hearth .90 x 1 metre, raised .10 metre above the floor and constructed of mud brick and plaster. Against the north-west wall in Levels IX and VII was a mud brick table or altar, and in Level IX another table was built against a niche in the south-west wall which persisted into Level VIII. In Level VII the north-west altar was a stepped structure decorated with claw-like feet and fragments of bitumen plaster in places. The hearth, altar and wall-niches in 281 suggest some sort of shrine, and the size and layout of the building as a whole indicate that it may have had some official function in addition to that of private house.

The house was rebuilt in Level VI, but some of the plan's regularity and balance were lost, and during the occupation represented by Level V the house was gradually abandoned, a process accelerated by the division of the area and the construction of a new building, House I, on

the north-western part of the plot. In Level IV, the last Ur III level in the TB area, the plan of House I emerges as that of a house with rooms on three sides of a courtyard (McCown, Haines and Hansen, 1967, 53; fig. 146). The courtyard, locus 207, was entered directly from the narrow lane 208; the house was unusual in that the rooms on the north-east of the courtyard, including the main room 197 with its central hearth, did not open directly upon the courtyard but were reached through 211. The house was well-built and well-drained, with vertical drains surrounded by baked brick paving (in one case water-proofed with bitumen) in loci 198, 195 and 193, and in its original form was quite sizeable (c. 270 metres^2), but after a disastrous fire the north-eastern part was abandoned and new rooms were built in the courtyard 207, a useful reminder that at times only part of a house need have been inhabited.

There is some problem over the dating of a house excavated at Aššur by tunnelling under the Sin-Shamash temple (Preusser, 1954, 5). The account of it is entitled 'The dwelling-house of Old-Akkadian date (c. 2300)' but in the last paragraph of the discussion Preusser concludes from the depth at which it was found and the nature of the graves overlying it that the house is to be dated to around 2100 B.C., the period of the IIIrd Dynasty of Ur. The relationship to the building of a mace-head with the name of Rimush, found near the wall of Room 7, is not established. The building is said to have had a very regular plan consisting of a house with central courtyard and a large forecourt (fig. 147);

the total area of the house was 1110 metres^2, or just under 800 metres^2 without the forecourt, comparable with House J at Nippur. The walls were of mud bricks and the forecourt and thresholds were of baked bricks set in sand and bonded with gypsum mortar. Gypsum was also used to form a socle .30 - .45 metre high at the base of the walls, above which there was .01 - .02 metre of mud plaster. The drains in the forecourt and bathroom 6A were not the vertical baked clay sectional drains of the south but horizontal channels roofed with brick; 6A was water-proofed with a layer of bitumen over its gypsum flooring. The size alone of this house suggests that it was both the residence and place of work of an official of some kind, whose business premises could have been situated in the north-western end of the house where the forecourt and Room 1 were joined by a monumental 3.50 metre wide doorway. Another house south-east of the ziggurat and dated to the Old Assyrian period had been badly damaged by later activity but seemed to conform to the usual courtyard plan, with a possible stairway to the roof; a slightly different, more northern tradition of building prevailed in the use of stone footings on mud brick foundations.

At Ur the plans of the house quarters were very long-lived, walls being founded directly over older walls so that there was considerable continuity from the Ur III period throughout the Isin-Larsa period until the city was sacked, apparently in the 11th year of Samsu-iluna (Woolley and Mallowan, 1976; figs. 148, 149 and 150). The streets of the house quarters were narrow and unpaved, and since they were used for the

disposal of rubbish their levels rose rapidly so that thresholds at the front doors of the houses were continually having to be raised to keep up with them. Unlike earlier housing areas (e.g. at Mari and Tell Chuera) no drains discharged into the street; the disposal of waste water was provided for by vertical baked clay drains within the houses. Any traffic in these narrow streets would have gone on foot or donkey, although presumably wider streets capable of taking wheeled traffic ran from the city gates; corners were often rounded to prevent damage to both buildings and traffic and yet another example of a rounded corner facing a sharp one can be seen in the bottom left-hand corner of fig. 150. Pressure on space in this period must have been considerable - Larsa period houses were even built over the IIIrd Dynasty mausolea - and Woolley estimated the population of the city, including the working-class suburb of Diqdiqqah, at not far short of a quarter of a million inhabitants. Unfortunately, no areas of poorer housing were excavated, although the fragmentary remains of the EH site may have been very small private houses (Woolley and Mallowan, 1976, Pl. 127).

The main housing areas excavated, the EM (fig. 149) and AH (fig. 150) sites, revealed a mixture of houses, shops, small public chapels and, despite the pressure on space, open areas such as Bakers' Square in the AH site (so-called because of a single oven in the centre). Table 5 indicates the very considerable variation in house sizes; there is less consistency in the siting of the larger houses than there was in Stratum Va at Tell Asmar, where the larger houses fronted the

broad main streets and the smaller houses tended to be concealed within the blocks, a practice which is also suggested by textual evidence from Sippar (Harris, 1975, 17). In the AH site the two sizeable houses Nos. 3 and 4 Straight Street open onto a narrow cul-de-sac, and the once-considerable No. 1 Old Street also lacks a street frontage, while several relatively small houses open onto Paternoster Row.

Woolley identified these smaller houses (e.g. Nos. 5, 7 and 9 Paternoster Row) as shops, mainly it seems on the grounds that they were too small to be dwellings (1976, 32). In fact, they are strongly reminiscent of earlier houses such as 10, 11 and 12 of Stratum Va at Tell Asmar, and like them were probably built on a plot which had been subdivided. They may well have been the homes of small craftsmen or shopkeepers, but there seems no reason to suppose that their function was entirely or even mainly commercial, except in cases such as Nos. 8 - 10 Paternoster Row, where one of the entrance vestibules could have been the shopkeeper's booth, or No. 14 Paternoster Row, where the front wall of Room 3 had been cut out to form a window with a sill 1 metre high. There is on the other hand no doubt that 1B Bakers' Square with its three furnaces was a workshop of some kind, and No. 1 Broad Street was remodelled to become a school. At Sippar, shops and taverns are usually described as being located in the city square or on a broad street (Harris, 1975, 21), and at Ur buildings with double entrances (usually taken as a sign of commercial activity) are indeed found only on the wider streets such as Paternoster Row.

In addition to the shops and private houses, Woolley identified several public chapels in the AH site, distinguished by certain peculiar features from other buildings (Woolley and Mallowan, 1976, 30). One was dedicated to the god Ḫendur-sag and one to the god Nin-šubur; the others were not identified by inscriptions, but shared characteristics such as recessed doorways with steps leading up to a pavement above street level. Most of the chapels were in commanding positions at street corners, like the Nin-šubur chapel between Paternoster Row and Store Street or the Ḫendur-sag chapel at the corner of Straight Street and Church Lane. The essential elements of the chapel were an open court and covered sanctuary with a recess in the back wall for a statue, but storerooms for offerings and other service rooms could be added. Tablets in the Ḫendur-sag chapel indicated that a number of priests were attached to the building, attending at fixed hours on various days of the week. The very small corner of No. 14 Paternoster Row sacrificed to create the 'Bazaar Chapel' indicates that the chapels were created by individual piety for public use; rather than being endowed by the State, they must have been supported by gifts from private citizens.

The inhabitants of Ur built so solidly that many of their houses are still recognisable today, fifty years after excavation; the visitor can walk round the rooms and, if sufficiently reckless, climb the stairs. Their survival is due very largely to the widespread use of baked bricks, which were used far more extensively at Ur than at other sites of this period. The front walls facing the street might be of

baked brick to the ceiling of the ground floor, a height of 15 - 18 courses. Elsewhere a damp course or foundation of three courses of burnt bricks was thought sufficient to protect the mud bricks of the superstructure from the destructive effects of saline ground-water. Unlike internal walls, the front wall was not plastered, but the use of burnt brick there was not necessarily mere conspicuous consumption; the burnt brickwork of the courtyard walls was often carried higher than that of the party walls and in both cases the intention was probably to guard as far as possible against dampness and weathering. The standard width of a party wall was .60 metre, but the street wall or the wall in front of the main room was occasionally heavier, perhaps for insulation. .60 metre was twice the normal length of a brick, and when bricks were laid to two faces a gap was left in the middle of the wall which was filled with broken brick rubble and mud. Alternate courses of headers and stretchers bonded the wall-core and wall-face. Mud mortar was used only on horizontal surfaces, but the quality of bricklaying was high throughout; corners were checked with baked clay and stone plumb-bobs. Burnt bricks, which varied greatly in quality, were used for foundations, thresholds, arches and pavements, and the most characteristic size was .27 - .28 x .17 - .19 x .085 - .09 metre; mud bricks were generally .26 - .27 x .17 - .18 x .07 - .09 metre. In thicker walls there was occasionally reed matting between courses (Woolley and Mallowan, 1976, 17 - 23).

Open courtyards and sometimes principal rooms were paved with burnt brick pavements set in clay mortar; other rooms

had beaten earth or clay floors, sometimes over a brick pavement. Bitumen was rare in the private houses although it was freely used in temples, suggesting that it was an expensive government monopoly in this period. Doorways had baked brick sills, and some were arched; the arched doorway of Room 6 of No. 3 New Street in the EM site, which had radial mortar joints wedged with sherds, had probably had a height of at least 2.85 metres. Street doors were of solid wood, hinged on a pole revolving in a door socket and held at the upper end by a metal ring or leather strap, but interior doors were lighter; in the chapel at No. 1 Paternoster Row the door of the sanctuary consisted of a wooden frame with panels of vertical reeds held in place with string lacing, very like the much earlier example from Tell es-Sawwan (see Chapter 3). No windows were found, although in several houses the walls were preserved to a height of 2.65 metres or more. Almost all interior surfaces were plastered with mud mixed with chopped straw, often but not always whitewashed.

Often one room was identifiable as the kitchen, brick-paved and provided with some permutation of the possibilities of cooking-range, hearth and tannur. Cooking-ranges consisted of a solid block of brickwork against one wall in the top of which were shallow troughs open at the near end in which charcoal could be burnt. The entrance lobby in most houses was paved, with a drain in one corner, and the brick paving of the courtyard generally sloped towards a vertical drain in the centre. Many houses were provided with one or more

lavatories, small brick-paved rooms with vertical drains; the lavatory-top was generally built with a round opening from which a narrow slit ran between the bricks to the top of the drain.

Most houses had at least one large rectangular room, usually situated on the opposite side of the courtyard to the entrance lobby, which was probably the main living-room. Some houses - 'every house of any size or pretensions' - had a room which may have fulfilled the function of a domestic chapel (Woolley and Mallowan, 1976, 29). The identification of the chapels was primarily based on the presence of a structure described as an altar, of mud-plastered burnt brick c. 1 metre wide and .35 metre high, which usually occupied the entire length of the short wall at the opposite end of the room to the entrance. Behind the altar there might be a simple niche, as in House J at Nippur, or a rectangular recess .60 x .40 x .30 metre from which in some cases, such as Nos. 1 - 3 Boundary Street or Nos. 8 - 10 Paternoster Row, a groove .30 metre wide ran from the top of the recess to the level of the ceiling; Woolley suggested that these might have been hearths for burning incense. Beam-holes in No. 3 Straight Street and No. 4 Paternoster Row led Woolley to believe that only the end of the chapel furthest from the entrance was covered, with a roof sloping up from 2 metres to 2.40 metres, but as there were no drains in the brick pavements of the chapels it seems more likely that most were fully roofed. Some rooms, in addition to the altar, contained a table set in one corner, c. .60 metre square and 1 metre high

with whitewashed plaster panels; a recurring feature of the chapels was the burial of a newly-born infant between two bowls in front of the table, the covering bowl flush with the pavement.

Other burials, in brick vaulted tombs or otherwise, were found beneath the pavements of the chapels, but as Barrelet has pointed out (1978, 275; 1980, 7), burials may also be found in every other room in the house, including the kitchen and lavatory, or in none. The recording of the graves in the Larsa period houses at Ur is such that it cannot be established whether the chapels tended to contain an unusually high concentration of burials, or particularly well-appointed graves, as was the case in the rooms with offering-tables at Tell ed-Dēr and Tello. Not all floors were excavated, and only graves which were considered to be of interest were recorded, so that it is impossible to separate those of different occupations or determine whether the numbers of burials were in proportion to the size of the house. Some of the population must have been buried in cemeteries elsewhere, and at Tell ed-Dēr, as we shall see, intra-mural burial went out of favour in the later levels. By no means all the houses at Ur have chapels, and as Barrelet notes, those that do are not always the largest (1978, 274); in some cases, such as Nos. 8 - 10 Paternoster Row, the room containing the altar must also have been the main living-room of the house. Nevertheless the evidence from Tello, Nippur, Ur and Tell ed-Dēr seems to indicate that niched altars or offering-tables were not uncommon in private houses and were probably used for some sort of cult practices.

In some houses at Ur, such as No. 1 Broad Street or No. 1 Old Street, there was a small room next to the chapel which contained large numbers of tablets; according to Woolley, these indicated that the occupants of the houses were 'ordinary citizens of the middle class', shopkeepers, traders, priests and scribes (Woolley and Mallowan, 1976, 123), like the merchant Ea-nasir who occupied No. 1 Old Street (Oppenheim, 1953, 6). No detailed study of the tablets from these house quarters has yet been undertaken, but these are exactly the groups one would expect to leave documentary evidence of their activities, while such evidence may be less plentiful for the occupants of the smaller houses which Woolley thought were shops. Documentary evidence is inevitably biassed against the lower strata of society.

Roofs were of the usual kind, of poplar-poles laid parallel at intervals not much more than the diameter of the pole, supporting layers of matting, reeds, mud and finally straw-tempered mud plaster. Palm logs and poplar were apparently the only timbers used (Woolley and Mallowan, 1976, 21 - 22). In several cases walls were preserved to a height of 2.65 metres or over, without trace of roof beams, so rooms were high and airy. On one side of the court, usually next to the lavatory, a flight of stairs led to the roof; the stairs were of brick on a core of solid rubble and in order to afford the necessary head-room to the lavatory the bottom step was often as high as .40 metre. The second flight usually departed at right angles from a square landing.

Woolley's reconstruction of these houses with a second storey reached by a wooden gallery supported on pillars in the courtyard below is an attractive one, but unfortunately the archaeological evidence on which it is based is very slight and comes mainly from one house in the EM site, No. 3 Gay Street (Woolley and Mallowan, 1976, 96; fig. 149). Apart from a slight irregularity at its southern corner, No. 3 Gay Street is a typical house of medium size, with a single range of rooms on each side of a central courtyard producing an almost square ground plan. The front wall of baked brick and the use of burnt brick for paving in most of the rooms indicate that it was the dwelling of a substantial citizen. The staircase was in Room 3, next to the lavatory; four brick steps giving a total rise of 1.20 metres rested on a solid filling, over which there was a landing. From here a second flight with wooden treads resting on beams apparently turned to the left over Room 4.

In the courtyard, the drain in the centre had been repaired with a fresh patch of bricks .07 metre above the level of the surrounding court; to Woolley, this was evidence that it was obviously not intended to drain the whole courtyard and he argued that if the outer part of the court was not to be drained this could only be because water did not accumulate there. Towards the south corner of the courtyard and in front of the north-east jamb of the kitchen door a single burnt brick was found, bedded to the pavement with stiff clay and surrounded by fragments of carbonised wood. On this brick, postulated Woolley, had rested a wooden post

which had supported a gallery .90 metre wide running around the court and giving access to the second storey. The roof of the house would have sloped inwards over the gallery to shelter it, thus explaining the raised centre of the pavement. The second storey, according to Woolley, was necessary because the ground floor alone would have provided insufficient living space for an entire household, and must have been left to the servants, with the living quarters of the family upstairs.

The only other archaeological evidence to indicate the presence of a second storey came from the largest house excavated, No. 11 Paternoster Row (Woolley, 1976, 150), where on top of the mud brick of the courtyard wall above the south-east corner of the door to Room 7 there were four burnt bricks which might have formed a door-sill at the stair-head; the walls of this building, especially the retaining walls of the stairs, were unusually thick, and would have been capable of supporting a second storey. In most of the smaller houses, with interior walls of mud brick only .60 metre thick, a second storey is unlikely on structural grounds, although some of them may have had one or two flimsy rooms on the roof. Texts from Sippar refer to upper storeys which could be rented separately (Harris, 1975, 22), but they were not a feature of every house. The presence of stairs does not necessarily signify an upper floor, since the flat roof of the Mesopotamian house is much in use during the summer months for sitting, sleeping and drying foodstuffs, and modern village and town houses in Iraq often have a flight of stairs leading

to the roof and perhaps to a single upper room. House-plan tablets, which sometimes show a flight of stairs, are no more illuminating on the subject of upper floors than they were on the question of main rooms v. courtyards (Heinrich and Seidl, 1967, 33). The evidence for wooden galleries is, as we have seen, very slight, and perhaps based more upon Woolley's knowledge of the town houses of Baghdad at the time of his excavations than upon the excavations themselves; some historians of Iraqi architecture believe that these timber-galleried houses reflected considerable Turkish influence. The galleries would have required large quantities of expensive timber, and one might expect to find brick pillar-bases to protect the pillars from the damp of the open courtyard.

In the Old Babylonian house at Tell ed-Dēr known as the 'central building', the excavator specifically states that the surface of the courtyard indicated that it had been completely open to the weather, although here too there was a flight of stairs (Gasche in de Meyer, 1978, 75 - 77), so any upper rooms must have been reached either by a covered passage within the width of the building or across the open roof. Since this house provides in several respects a close parallel to the houses at Ur this evidence is of considerable significance. It survived essentially unchanged through several rebuildings (fig. 151 shows it in subphase 1g2), although in its latter phases it became impoverished and seems to have been occupied by craftsmen of some kind whose activities produced very ashy occupation levels.

The house was originally founded within trenches excavated just inside the boundaries of the plot to a depth of .80 - .90 metre; within the foundation trench of locus 6 there was a foundation offering in the form of a goose laid on baked bricks and covered with sherds. The material dug out from the trenches was used to make the mud bricks of the foundations, but the mud bricks of the superstructure were of a better quality of material brought in from outside.

The stairs, which were of mud brick on a mud brick core, indicate that, as at Ur, the rooms were high, c. 3 - 3.20 metres. In lg2 the last preserved stair was carried on a vault over the open space beneath. There were pivot-stones (usually baked brick, but in some cases jar-bases) at the outer doors of loci 3 and 5 and at the inner doors of loci 2, 6 and 8; two of the doorways had baked brick sills. In lg2 there was a hearth in the centre of the courtyard locus 2, a feature also found in houses at Nippur, and a tannur in the north-east corner. It should be noted that this house is exceptional for the period in having walls, not corners, aligned on the cardinal points. Room 9 was identified as the lavatory, with a vertical drain; Room 1 was the kitchen throughout most phases of the house. In lg2 Room 1 was provided with a bench, a hearth and a tannur; in an earlier phase (lil) there were six graves, of 'depressing poverty' compared with other graves in the house, beneath the floor of Room 1, which Gasche plausibly suggested represented the servants who lived in this room - evidence that Woolley was unnecessarily fastidious in supposing these houses too small

to accommodate both owners and servants in the space of a single storey. Support for Woolley's identification of chapels in the Ur houses exists in Room 7, where in sub-phase 1i2 an altar of mud bricks was set up in the south-west corner of the room; its two visible surfaces had recessed niches and a corbelled cornice. The niche on the opposite wall was formed by the blocking of the door between loci 7 and 8. The five graves found under the floor contemporary with the setting up of the altar were the richest of the phase, but in subsequent phases the practice of burying the dead within the house gradually lapsed, and in phase 1g there were only four graves in the building compared with fourteen in phase 1i. Most of the occupants were obviously being buried elsewhere, and there is a concentration of graves in the open area to the east of the central building, loci 23 and 43. The relationship of the central building of 1g2 to the structures to the north and north-east indicates that at Tell ed-Dēr extra space was acquired by expanding horizontally rather than vertically.

There are indications that this was also the case at Ur, despite the greater scale of the settlement and therefore, one presumes, the increased demand for housing. Despite the continuity in the overall plan of the house areas, small adjustments were constantly being made within individual houses (see fig. 150). No. 7 Church Lane, for example, expanded southwards and acquired rooms at the expense of the large houses No. 1 Old Street and No. 5 Church Lane; Nos. 5, 7 and 9 Paternoster Row, as well as 4A, 6, 8, 10 and 12 on the

opposite side of the road seem to represent the subdivision of larger houses, and it is possible to detect that the single unit Nos. 11, 11A and 11B Paternoster Row has absorbed a smaller house which originally centred around courtyard 16. No. 14 Paternoster Row, which gave up a corner to form the Bazaar Chapel, seems subsequently to have become a bakery or food shop. The street wall of Room 3, which contained a tannur and baked brick hearth, had been cut away to form a window with a sill 1 metre above street level reminiscent of modern Iraqi kebab-shops. The floor of Room 3 was covered with bitumen overlaid with reed mats, one of the rare occasions on which bitumen was used in the private houses at Ur (Woolley and Mallowan, 1976, 153).

Another house which was remodelled to form business premises was No. 1B Bakers' Square (Woolley and Mallowan, 1976, 157). The original walls of the house were razed until only the courtyard and three rooms were left, and three furnaces were installed, each with a stoke-hole opening into Room 3. This arrangement presumably protected the stoker from the worst heat of the furnaces. The stoke-holes had sides of burnt brick roofed with mud brick arches, and the furnaces were of bricks set in and plastered with clay on brick bases sunk into the floor; both furnaces and stoke-holes had been repaired more than once. The function of this workshop is not known, but the nature of the furnaces suggests some craft requiring high temperatures, such as metal-working.

No. 1 Broad Street (Woolley and Mallowan, 1976, 136)

began life as a large square house of regular plan, with a front door leading through the vestibule 1 to the courtyard 2. Later the door between Rooms 1 and 2 was blocked, and a second entrance created opening directly onto the courtyard. This structural change may be explained by the presence of hundreds of 'school exercise' tablets in the house; the original entrance, No. 1, would have given access to the school-master's living-quarters, while No. 1A opened onto the courtyard which with Rooms 3 and 4 was occupied by the school. Nearly 2000 tablets in all were found in this house, and in addition to the school exercises there were business records referring to temple affairs.

This constant process of adjustment meant that very few houses retained a strictly regular square or rectangular plan. No. 4 Straight Street (Woolley and Mallowan, 1976, 161) was one of the most regular of the AH site houses; only the south-east wall left something to be desired. It is also one of the larger houses of the area, and its heavy walls with up to twenty-two courses of burnt brick could have supported an upper storey, although a staircase is not mentioned. Four periods were detectable, the first going back as far as Ur III times, the latest dating to the end of the Larsa period. Room 6 was the chapel, with an altar and niche and a brick vaulted tomb and graves beneath the floor; burials were also found beneath the floors of Rooms 4 and 9. Room 2, the court-yard, had a baked brick pavement sloping down to a central drain and Room 5 was identified as the lavatory. The uses of the other rooms remain obscure, but all were large enough to have been used as living-rooms, and it seems likely that

this was the dwelling of a large and wealthy family.

Like the houses of Stratum Va at Tell Asmar, the houses at Ur can be roughly divided into two categories on the grounds of both shape and size; small houses with long narrow plans, usually between 25 and 60 metres^2 in area, and larger houses of square plan, most of which are between 100 and 300 metres^2 in area. Double entrances to ensure the separation of business and domestic traffic indicate that both types of house could on occasion combine residential and commercial functions; the fact that there are more shops and business premises than at Tell Asmar may reflect the increase in private trading in this period described by Leemans (1960). One of the clearest examples of the house with double entrances was in the EM site at Nos. 2 - 3 New Street (Woolley and Mallowan, 1976, 114; fig. 149), where the doorway marked No. 2 led into a roughly-paved vestibule opening into a long chamber which could have been a store-room, while the doorway No. 3 led to the living quarters of the house around the courtyard.

If the criteria employed to distinguish nuclear and extended family dwellings in Stratum Va at Tell Asmar are applied to the houses of the AH site at Ur, it is possible to distinguish about sixteen linear-plan, single-family houses and twenty square-plan, extended-family houses. As at Tell Asmar, the grouping of the linear houses in twos and threes indicates that plots have been subdivided, a process on which textual evidence from Nippur throws more light.

Within the square houses it is possible to identify 91 rooms which were large enough to serve as living- and sleeping-rooms, excluding chapels, entrances and passage-ways but including kitchens; since some of the houses are incomplete and at least two of them may have had upper stories, this is probably an underestimate. With a range of 4 - 10 occupants per living-room, the AH quarter would thus have had between 428 and 1070 inhabitants; the linear houses, which accounted for 44% of the total number of houses, would have housed 15% of the population in 15.5% of the housing by area, whereas at Tell Asmar the linear houses accounted for 40% of all houses and housed 27% of the population in 22% of the housing by area. It is dangerous to generalise from what are at Tell Asmar and Ur very small fractions of the total site, but a smaller proportion of the population seems to have been living in single-family dwellings at Ur and there is a much clearer distinction between the two types of house in terms of area than at Tell Asmar (see fig. 158); there seems to have been a more marked degree of social and economic stratification in the excavated areas of Old Babylonian Ur than there was in late Early Dynastic Tell Asmar.

The total excavated area of the AH quarter including chapels, shops, streets and open areas was about 7300 metres^2; if the same density of population prevailed throughout the walled city (excluding the Temenos and harbour areas) there would have been between 21,400 and 53,500 inhabitants. This is broadly in agreement with Woolley's figure of 34,000 inhabitants for the walled city, arrived at by rather different

means, although once again it must be pointed out that the excavated area is only a very small fraction of the city, less than 2%. Since the area within the walls was only about 1/6th of the visible spread of occupation in the Larsa period, Woolley estimated the number of inhabitants of 'Greater Ur' at a quarter of a million, but the density of settlement outside the walls would almost certainly have been much less and this figure is probably too high. It must be borne in mind that all these figures are based on a series of approximations, but the discrepancy between 120 - 300 inhabitants for c. 2500 metres^2 of excavated area at Tell Asmar and 428 - 1070 inhabitants for c. 7300 metres^2 of excavated area at Ur is not incompatible with the slightly different relative densities one might expect in a wealthy urban centre and a smaller provincial city.

A study has recently been published of tablets from some of the Old Babylonian houses in the TA area of the Scribal Quarter at Nippur which throws some light on the relationships between family structure and house property (Stone, 1981). Working from the plan prepared in the field rather than the published plan of the area (in McCown, Haines and Hansen, 1967, Pl. 72A and B), Stone establishes first that the house areas cited in the texts refer to roofed floor space, excluding courtyards; this implies that the value of a house was as much related to the quantity and quality of the roof timbers as to the price of land. Unfortunately the small and bizarre scales of many published plans make any but the roughest calculations of overall area impossible, but the figures

given in the table of house areas at Sippar (Harris, 1975, 22 - 23) seem also to refer only to roofed space.

At Nippur the eldest son had preferential rights of inheritance, usually amounting to 10% of the entire estate, after which the property was divided equally among all the heirs; a similar system prevailed at Ur, although in Sippar estates were divided equally. In terms of house property, heirs must have received their shares in whole rooms; Stone suggests that the assignment started at the front door with the eldest son as the representative of the family to the outside world being awarded the entrance hall as his 'preferential portion', although it seems more likely that the main living-room would have ranked highest in prestige.

The texts relating to House I in the TA area reveal that in 1742 B.C. it was inherited by four brothers, two of whom soon disposed of their shares to their brothers. One of the two remaining brothers then sold his share to an outsider, one Ipqu-Enlil, an event that can probably be correlated with the opening of a door to allow the new owner access to his property. Unfortunately for him, times were hard in Nippur and a few years later he sold some of his property to the two brothers who owned House H next door; since the property of the remaining heir, Enlil-Galzu, lay between House H and Ipqu-Enlil's property, this transaction cannot have been entirely satisfactory to any of the parties involved, and Ipqu-Enlil eventually had to negotiate an exchange of property (with cash adjustment) with Enlil-Galzu in order to dispose of

all his holdings in House I to the owners of House H. He made a loss. In response to these transactions doors were blocked and opened in such a way as to join House H and the purchased portion of House I (which subsequently became the sole property of one of the brothers) and create a self-contained house for Enlil-Galzu.

Of even more interest than the clarification of these architectural alterations is the evidence provided by the texts on the families occupying these houses. The original owner of House I had had four sons, at least two of whom were probably living in the house at the time of their father's death since both retained their shares in the house for several years. In this phase, while the residence of an extended family, House I had an almost square ground plan; later, when it had become the residence of Enlil-galzu and his family, it assumes a linear shape. Texts from another neighbouring house with linear plan, House F, also suggest nuclear family residence. There thus appears to be documentary confirmation from Nippur of the hypothesis that houses with linear plans were occupied by nuclear families, houses with square plans by extended families.

In the TA area at Nippur the proportion of linear houses to square houses was 4:1, while in the TB area only square houses were excavated, emphasising the perils of generalising from a small sample. The identification of living-rooms on grounds of size alone has also its dangers, for while it is difficult to devise any useful alternative criterion, it will

almost certainly lead to the inclusion of rooms which were never used as living-rooms and rooms which were in use as living-rooms for only part of the life of the house. A mud brick house is freely adaptable, and the account in Chapter 2 of House 3 at Kheshuga, where former living-rooms were being used as grain stores, illustrates how such a house may be subject to a constant process of change.

Stone compares statistics on housing in Old Babylonian Nippur with population figures for the two modern farming villages in the Iranian Zagros already discussed in Chapter 2 (Kramer, 1979 and Watson, 1978), although there is no good reason to suppose that their social structures, economies or mortality rates are directly comparable. For the various reasons discussed in Chapter 2, modern population figures are unlikely to be relevant to the reconstruction of housing patterns in ancient cities, and if more is to be known of ancient population structure - and information on factors such as life expectancy and family sizes is much needed - the way forward would seem to be through precisely the sort of detailed study of family archives which Stone herself has undertaken.

The plan of the Isin-Larsa period houses of Level II (fig. 152) in the TB area at Nippur shows three complete houses (B, C and D) on the south-west side of street locus 42 (McCown, Haines and Hansen, 1967, 56). All are of square, central courtyard plan; Houses B and D are of moderate size for this type of house and House C, at 214 metres^2, is comparable with the larger houses at Ur. This presumably implies

that it was a more affluent quarter than the TA area with its linear houses, but the details of their construction reflect a less prosperous economy than at Ur. There was less use of baked brick; walls were of straw-tempered unbaked bricks in alternate courses of headers and stretchers, mud-plastered and usually founded on the walls of the previous level with a layer of reed matting between to provide grip. Occasionally, as in several houses of TB Level II, there was a damp course of three or more courses of baked brick. Baked brick paving was rare, and mainly found in courtyards and bathrooms, often in small areas around vertical drains; floors were usually of earth, sometimes specially-prepared, on which thin layers of debris accumulated. Evidence from the burnt House I in Level IV showed the method of roofing to have been the usual one of timber (probably palm logs), matting, reeds and mud plaster. Staircases were uncommon (there may have been one in Room 139 of House D in Level II) and on the whole it seems probable that these houses were single-storied (McCown, Haines and Hansen, 1967, 34 - 40).

Stone or baked brick door sockets testify to the presence of wooden doors hinged on poles, especially at street doors, but most doorways had no sills except those formed by the foundations underneath, and baked brick sills were only very occasionally found. There was no sign of windows; as in other houses of this period, most rooms must have depended for lighting and ventilation on doors opening onto the central courtyard. Hearths, probably for heating rather than cooking, were sited in courtyards and main living-rooms. A few cooking-

ranges with baked or mud brick kerbs and long fireboxes on which pots could be placed over burning charcoal were found, but at Nippur, unlike Ur, they did not usually occur in conjunction with hearths and tannurs in identifiable kitchens; an exception to this rule is found in Room 26 of an Old Babylonian house excavated in the WB area (Franke in Gibson et al., 1978b, fig. 41) where there were always one or more ovens and a hearth of mud bricks. This was a large house with two courtyards and it may be that most houses could not spare an entire room to be devoted to cooking; the larger the house, the more likely it is to have rooms of specialist function.

Many houses had small brick-paved rooms with vertical drains in the floor, but there were no built lavatories like those at Ur. Bitumen was rarely if ever used. Water must have been obtained from the nearest canal, as in most ancient towns and cities. There were no private chapels of the type known from Ur and Tell ed-Dēr, but in some houses there was a small shrine in the main living-room, usually with a niche and platform or table. They were not associated with burials.

The Nippur houses, on the whole, are smaller and use less expensive materials than those at Ur; they also differ in the absence of private chapels, specialised kitchens and staircases. Since the houses in the Scribal Quarter at Nippur were occupied for the most part by priests and officials (the only sign of commercial activity is a possible

bakery in Level I) whom one might have expected to be of comparable status to the middle-class residents of the Ur house quarters, it is clear that the economy of Nippur was less flourishing than that of Ur, and indeed there is textual evidence that from the mid Isin-Larsa period to the sacking of Nippur by Samsu-iluna in 1739 B.C. the economy was in a severe decline (Stone, 1977). Nippur was temporarily re-occupied after 1739 B.C., but twenty years later the city was abandoned and was not to be re-occupied for three centuries.

Further north, in the Diyala region, the heavily-fortified site of Tell Harmal (ancient Shaduppum) seems to have been deliberately constructed as the administrative centre of the district (Baqir, 1946; fig. 153). Most of the town's inhabitants were probably employed by the large temple of Nisaba excavated on the northern side of the main street or one of three smaller shrines on the narrow lane to the left of the gate, or else worked in the large administrative building which faced the temple of Nisaba. The row of flimsy structures built up against the fortification wall to the left of the towered gateway may have been shops. Much of the excavated area is occupied by fragments of buildings of indefinite plan and unknown purpose, but about five linear-plan and thirteen square houses can be distinguished, and about 32 possible living-rooms within the latter would give a range of 148 - 370 occupants for only 1819 metres^2 of excavated housing. The linear houses, 28% of the total number, would have accommodated 13.5% of the population in 15% of

the housing area, a much lower proportion than at other sites. The density of occupation, on the other hand, is unusually high; few details are given of the construction and fittings of the houses and it is all too likely that in identifying living-rooms on grounds of size alone rooms such as bathrooms and store-rooms have been included to produce an artificially high total. In relation to the total excavated area, which was approximately half that of the walled town, the figures from the identifiable houses seem low; there must surely have been more houses among the areas of fragmentary walling shown on the plan. It is difficult to believe that the massive defences protected only 296 - 740 souls even though official buildings probably occupied a higher proportion of a settlement of this type than they did in larger cities. Without a more detailed description of the houses it is impossible to say more than that the high proportion of square-plan houses, all of moderate size, probably indicates the official status of most of the town's inhabitants; a similar position may have existed at Tell adh-Dhiba'i, near Baghdad (Mustafa, 1949, 173).

The temples and administrative buildings of Tell Harmal are large and regular in plan, but the houses bear witness to the same small adjustments and encroachments as were visible at Ur and Nippur. The site goes back to Akkadian times, but the foundation of the walled town dates to a period which seems to have been one of prosperity and expansion throughout the Diyala region; the town walls of the Larsa period at Tell Asmar indicate an enormous increase in the

extent of the town (Delougaz, Hill and Lloyd, 1967). This prosperous interlude was brought to an end by the upheavals accompanying the rise of the 1st Dynasty of Babylon. At Tell Harmâl the entire settlement was destroyed by fire, and though there were traces of Kassite re-occupation, the administrative centre was probably moved to another of the mounds in the area.

TABLE 5: UR III, ISIN-LARSA AND OLD BABYLONIAN PERIOD HOUSE AREAS

Ur, E.M. Site:	No. 3	Gay Street	152 metres^2
	No. 4	" "	131 metres^2
	No. 5	" "	55 metres^2
	No. 1	Quiet Street	110 metres^2
	No. 2	" "	127 metres^2
	No. 3	" "	102 metres^2
	No. 5	" "	108 metres^2
	No. 1	New Street	46 metres^2
	Nos. 2-3	" "	99 metres^2
Ur, A.H. Site:	Nos. 1-3	Boundary Street	254 metres^2
	No. 1	Niche Lane	62 metres^2
	No. 3	" "	82 metres^2
	Nos. 4-9	" "	157 metres^2
	No. 1	Old Street	203 metres^2
	No. 1	Church Lane (Ḫendur-sag Chapel)	95 metres^2
	No. 2	Church Lane	297 metres^2
	No. 3	" "	122 metres^2
	No. 5	" "	241 metres^2
	No. 7	" "	166 metres^2
	No. 9	" "	243 metres^2
	No. 11	" " (Ram Chapel)	112 metres^2
	No. 13	Church Lane	271 metres^2
	No. 15	" "	95 metres^2
	No. 1	Broad Street	174 metres^2
	No. 1	Store Street	221 metres^2
	No. 2	" "	21 metres^2
	Nos. 3-5	" " (possibly a chapel: cellars below contained grain. Report and plan confused)	(incomplete)
	No. 4	Store Street	27 metres^2
	No. 6	" "	33 metres^2
	No. 1	Paternoster Row (Nin-Šubur Chapel)	52 metres^2

Table 5: Ur III, Isin-Larsa and Old Babylonian Period House Areas (cont.)

Ur, A.H. Site (cont.):			
	No. 3	Paternoster Row	124 metres^2
	Nos. 4-4A	" "	289 metres^2
	No. 5	" "	42 metres^2
	No. 6	" "	31 metres^2
	No. 7	" "	42 metres^2
	Nos. 8-10	" "	50 metres^2
	No. 9	" "	47 metres^2
	Nos. 11-11A-11B	" "	479 metres^2
	No. 12	" "	29 metres^2
	No. 14	" "	86 metres^2
		Bazaar Chapel	24 metres^2
	No. 1	Bazaar Alley	22 metres^2
	No. 2	" "	32 metres^2
	No. 3	" "	33 metres^2
	No. 1B	Bakers' Square	99 metres^2
	No. 3	Straight Street	285 metres^2
	No. 4	" "	203 metres^2
	No. 6	" "	48 metres^2
	No. 7	" "	58 metres^2
	No. 8	" "	48 metres^2
	No. 10	" "	52 metres^2
	No. 12	" "	73 metres^2
Nippur: W.B. area	House A		204 metres^2
T.B. VII	House J		503 metres^2
T.B. IV	House I		270 metres^2
T.B. III	House E		145 metres^2
T.B. II	House B		130 metres^2
	House C		214 metres^2
	House D		131 metres^2
T.A. X	House E		70 metres^2
	House F		70 metres^2
	House G		43 metres^2

Table 5: Ur III, Isin-Larsa and Old Babylonian Period House Areas (cont.)

Nippur: TA X (cont.)	House H	58 metres^2
	House I	110 metres^2
	House K	145 metres^2
Assur:	'Old Akkadian House'	1110 metres^2
	'Old Assyrian House'	494 metres^2
Tello:	Ur III House	294 metres^2
Tell ed-Dēr: lg2	Central Building	202 metres^2
Tell Harmal:	House 94	55 metres^2
	House 114	97 metres^2
	House 159	154 metres^2
	House 141	115 metres^2
	House 157	140 metres^2
	House 1	94 metres^2
	House 97	48 metres^2
	House 103	42 metres^2
Tell Asmar:	Larsa House	83 metres^2

CHAPTER 7

The Period of Kassite Rule.

The evidence for housing of the Kassite period in southern Mesopotamia is extremely sparse, and where house remains have been found they have often been damaged by erosion or subsequent building activity (fig. 154). Both Ur and Nippur were abandoned, at least partially and temporarily, after the rigorous suppression of the southern revolt by Samsu-iluna in 1739 B.C., and although both cities were subsequently re-occupied, there seems to have been a redistribution of population away from the major urban centres. By the end of the First Dynasty of Babylon in 1595 B.C. the south had come under the dynasty of the Sealand, the north under Kassite rule. Neither power initially operated from a strong urban base, and although a house area has recently been excavated at Dur Kurigalzu (modern Aqar Quf), which was a Kassite foundation, this has not been published at the time of writing.

At Nippur, the only complete surviving house plan from the Kassite period was that of House D in TA Level VI (McCown, Haines and Hansen, 1967, Pl. 74), which appears to be a self-contained unit of three rooms and a brick-paved courtyard, although the area around it was not completely excavated. Excavations in other areas at Nippur have produced some evidence of Kassite activity at the site after the period of abandonment, but so far much of the evidence from the Kassite levels is fragmentary and no intelligible

house plans are forthcoming (Gibson, 1975; 1978b). As at Babylon, where remains of some rather well-built houses in the commercial quarter of Merkes were excavated (Reuther, 1926, 16), there does not seem to have been any very great departure from the courtyard house of earlier periods. Elsewhere at Babylon, Kassite levels are inaccessible below the water-table.

At Ur, the stratigraphic picture is not entirely clear. According to Woolley, many houses of the Larsa period were subsequently re-used at a higher level (1965, 1), in which case part at least of the population must have returned within a few years of the sack, before the walls were badly weathered. The suggestion is that the re-occupation was no more than a patching-up of the old ruins, indicating the general impoverishment of the southern cities in this period. Later levels, belonging to the period when the Kassite kings had conquered the Sealand territories and re-unified Babylonia, are unfortunately either denuded or disturbed by first millennium activity. Such fragments as remain suggest that the city was less populous and less wealthy than in the Larsa period (see Chapter 6). Kassite houses in the recessed angle of the north-west Temenos wall of the period had drains which discharged into the street outside, an unheard-of practice in the earlier house quarters (Woolley, 1965, 75 and Pl. 56), and the houses on the EM and KPS sites, though sizeable, were not well-built. The walls of the EM house (fig. 155), which consisted of five brick-paved rooms and a clay-floored courtyard, were roughly-built with baked brick faces and a

mud and rubble core, while the walls of House A on the KPS site were a patchwork of mud and baked brick, sometimes occurring together in the same course (fig. 156). As excavated, House A had ten rooms and two courtyards (A2 and A3), but the walls were badly eroded and the house may originally have been larger.

The only site of this period to yield a sizeable sample of domestic architecture is the northern city of Nuzi (Starr, 1939). In addition to temples and a palace or administrative centre, large areas of housing of the fifteenth century B.C. have been excavated, a period when the city had a predominantly Hurrian population and was subject to the kingdom of Mitanni, centred in north-east Syria. Unfortunately it has proved impossible to reproduce the very large-scale published plan of Stratum 11 (Starr, 1939, Vol. 2 Plan 13); fig. 157 shows the overall city plan on a small scale.

The standard of building seems to have been high at Nuzi (Starr, 1939, 42 - 61). Walls were of mud brick with chopped straw temper; a similar mixture in more liquid form was used for mortar. The usual brick size was .33 x .33 x .13 metre for both mud and baked bricks, although there was a slightly greater variety in the latter, which were used only sparingly in private houses. Arc-shaped bricks were produced for well-heads. The usual foundation was a continuation of the house wall in a trench below floor level and not, as in most Mesopotamian domestic architecture, a mere levelling-off of earlier walls.

Most floors were of evenly-packed earth, to which gravel might be added for a firmer texture. Baked brick pavements were laid in sand or sandy earth, and uniformity of brick size seems to have been of little importance in paving; in the smaller houses the court was often paved with bricks of varying sizes (whole or broken), flat field stones and even sherds. Sometimes mud brick was used for paving, and there were a few examples of gypsum-plastered floors. Bitumen was frequently used as a plaster on baked brick floors and walls in bathrooms and water-storage areas; Nuzi is near the sources of bitumen in the Kirkuk area.

The evidence of several burnt houses indicates that the usual flat roof of beams, reeds and mud plaster prevailed; most of the charcoal was poplar, though palm and oak were also found. The usual height of rooms in private houses seems to have been 2 metres or a little more, and in most houses the walls are too slight (and the debris was insufficient) for there to have been upper stories, although in a few cases there were indications of a superstructure over a limited part of the ground floor.

Door-sockets formed almost the only use for stone at the site, although the commonest door-socket was a brick or brick fragment with a depression in it. Most doorways probably had flat timber lintels, but there were a few examples of arches. Door-sills were customary if not universal; mud brick sills were raised above the level of the floor, presumably to keep out draughts and rain-water and keep in

the contents of the room, but baked brick sills were set flush with the floor, and in wealthy houses the entire doorway was paved.

A curious phenomenon in some Nuzi houses was the doorless room; in some cases walls almost 2 metres high with solid faces of bonded brick were excavated without finding doors. The presence of pavements and ordinary household objects in some of these rooms testifies to the fact that they were in everyday use, and were not merely store-rooms. One such room in Temple A provided proof of entry over the high separating wall, but it is also possible that in some cases access was from the roof by ladder. Since no windows were found and lighting and ventilation were derived from the doorways, these rooms must have been stuffy and ill-lit; perhaps there were small windows immediately under the eaves like those used for ventilation in modern Iraqi houses, although they are usually found in conjunction with another row of holes low down in the facing wall, so that a through draught is set up.

Interior walls were usually plastered with mud mixed with chopped straw, and in main rooms there was often decoration in red, pink, white, black or grey paint, the last often used as a background for other colours. The commonest scheme was a vertical field of red between two fields of grey, each occupying about a third of the wall and sometimes separated by a narrow band of spiral design; this panelled decoration occupied only one wall of each room, the other

three being painted plain grey, and it may have been topped by stylised figured and geometric designs, like the bands of bulls' heads, human faces and floral motifs found in the Palace.

Most houses were equipped with hearths formed by four bricks placed in a square, their upper surfaces flush with the floor. There was often a hearth in the main room, presumably for heating, usually positioned on the centre of the short axis and $^{2}/3$ of the way down the long axis. On at least two occasions, in C30 and F24 of Stratum III, the short wall behind the hearth bore panelled decoration, indicating that this was the focal point of the room; it is possible that distinctions in status were conveyed by seating position, as in the modern Iraqi mudhif, with the most important citizens sitting at the hearth end of the room. In several cases hearths showed thin coatings of bitumen, probably from its use as fuel.

Tannurs were rarely found in the same rooms as hearths, even when the presence of storage jars and grinding tools clearly indicated that a room was used for food preparation. There were often no ovens at all in a house, so bread may have been available from professional bakers, and where present they were usually near an outside wall or in a separate enclosure within the courtyard. Horizontal ovens c. .75 metre wide and 1.50 metres long roofed with roughly corbelled arches of mud brick were also found.

Some houses were provided with beehive-shaped storage pits 2 metres deep and 1.75 metres in diameter at the base; the presence of carbonised grain leaves no doubt about their purpose, and they were probably a cheap (and less satisfactory) alternative to storage jars.

Most private houses probably contained few furnishings beyond household utensils, bedding and mats or rugs, and most of the items of furniture mentioned in texts seem to have belonged to the palace or temple, but the richer may have had couches, often cited in pairs and equipped with cloths; chairs were numerous, and baskets of various woods are listed (Lacheman in Starr, 1939, 536).

At the base of the mound was the city wall, 2.5 metres thick and substantially buttressed, enclosing an area of 44,000 metres^2 (Starr, 1939, Vol. 2 Plan 13; fig. 157). Most of the centre of the mound was occupied by an extensive palace, the administrative centre of the city; across Street 5 to the north-west was a temple, and the northern corner of the city seems to have been occupied by a large official storage complex. Street 5 was surfaced with successive layers of gypsum mixed with pebbles, but the other streets were not specially surfaced and rubbish accumulated in them, with the exception of Street 4 on the south side of the Palace which was kept unusually clean; a door-jamb at the south-east end suggests that it may have been closed by a door at night. Drains from the houses emptied into the street, sometimes into a drain running beneath the surface of the street which

probably emptied into the open at the base of the mound. The Palace had a particularly elaborate drainage system. Some private houses had lavatories formed by two brick platforms four or five courses high with a slit .10 - .15 metre wide between them leading to a drain, but many houses had no drainage at all, and the numbers and lay-out of the street drains indicate that they were provided by a few wealthy individuals (whose neighbours might take advantage of the facility) rather than being a service provided by a central authority.

The three different areas of housing excavated in Stratum II - the north-west ridge, south-western and south-eastern areas, are markedly different (see Starr, 1939, Vol. 2 Plan 13). At the southern end of the north-west ridge the houses are rambling and irregular, obviously the products of a long process of encroachment and adjustment. Group 24 (Starr, 1939, 213), formed by rooms G43, G44, F37, F38, F39, F33, F25, G33, F24, F31, F14, F17 and F1 is over 400 metres^2 even in its incomplete state; originally the house probably extended from Street 15 to the south wall of the main room, F24, but it has absorbed rooms from other units to the south including the kitchen F17. F39 may have been a courtyard, but the plan characterised by the ordered arrangement of rooms around a central courtyard which has been encountered elsewhere appears never to have been present. The smaller house to the west, Group 25 (Starr, 1939, 220; G17, F7, F11, F13 - 19, F16, F28, F23) has also taken over parts of more than one house of preceding levels and has two courtyards F7 and the

paved F11, leading to the main room F13 - 19. Like Group 23 (Starr, 1939, 212; F3, F6, F4, F8, F12, F9 and F15) these houses are built around their main rooms rather than their courtyards. These main rooms are rather wider than has hitherto been usual in private houses - F24 was 5.4 metres wide - but the fact that the south wall of F24 bore a red and grey wall painting indicates that the room must have been roofed; suitable timber must have been more easily obtainable this far north. The five doorless rooms A4, A5, F27, F29 and F35 (Starr, 1939, 223) on the edge of this block seem to have been a private storage unit, perhaps belonging to some wealthy citizen like the owner of Group 24.

Towards the northern end of the ridge, in the area of the official storage building of Group 36, the houses become more regular, although unfortunately many are fragmentary. Group 32 (Starr, 1939, 235; C40, C24, C37, C36 and C26) adopted the former Street 11 as an entrance-passage leading to C37. According to Starr, C37 was open and C40 (which contained an oven behind a small enclosure wall) was roofed; if this were a southern site one would automatically assume that the 6 metres-wide C40 was open and C37 roofed, producing a fairly normal linear-plan house. Group 35 (Starr, 1939, 240; C41, C44, C43, C39, C38, C47, C45 and C41) is regular and comprehensible in plan, with a door from the street leading through a vestibule to the partly-paved courtyard C39 with its oven.

The houses in the south-west section of the mound across

Street 4 from the Palace provide the most consistently regular group of plans. Most are more or less rectangular in outline with a clearly identifiable main room, significantly larger than the other rooms of the house, and a smaller courtyard, usually paved or partly paved. Group 3 (Starr, 1939, 273; P474, P485, P472, P464, P470, P335 and P335A, P323, P331, P47, P37 and P35), which is very regular, is clearly the closest approximation to the Nuzi builders' ideal plan; the street entrance leads directly into the partly-paved courtyard, from which doors lead to the ranges of rooms around the outside of the house and to the main room in the centre. There is often a small store-room next to the main room, in this case P470 with its clay bins, and the main room itself was usually kept comparatively free from household objects, although in this case P35 contained pottery, grinding stones, a whetstone, stone weights and copper implements.

In most of these houses there is more than one door opening off the vestibule, and the rooms on each side of the house are intercommunicating instead of being accessible only from the courtyard, as in most southern houses. It was thus possible to reach the different work-rooms and living-rooms without necessarily having to pass through the main room. In Group 3 the store-rooms and living-rooms on the north-east and north-west sides of the house are quite separate from the main room, and in Group 6 (Starr, 1939, 279; P357, P344, P341, P322, P321, P321A, P347, P349, P340 - 348, P329, P350 and P356) the rooms on the south-west and south-east are accessible by a separate door from Street 4 as well as via

the partly-paved courtyard P341 and main room P322 from Street 3. Group 8 (Starr, 1939, 282; P448, P456, P459, P457, P461, P460 - 466, P446, P446A, P452, P465 and P467) has a similar division between the group of small rooms on the south-east and the larger rooms on the south-west, although Group 10 (Starr, 1939, 284; P313, P377, P444, P326, P326B, P311 - 487, K300, K199, K176 and K184) is arranged round the paved courtyard P326B, and Group 5 (Starr, 1939, 278; P389, P388, P445, P355, P376 and P375) may also have had a central courtyard. Most of the houses in this section are thus large and regular in plan, the exception being Group 9 at the south end of Street 3, which seems to consist of three small units opening off the large courtyard P309 - 486 (Starr, 1939, 283).

Any pattern which might seem to be emerging is blurred by the houses on the other side of the Palace, in the south-east section of the city, where the houses are not only formless and ill-defined in plan but very often incomplete as well. The incomplete house Group 15 (Starr, 1939, 304) and Group 16 (Starr, 1939, 307) next door, which Starr interpreted as a chapel on the strength of the objects found in it, are comprehensible enough, but it is difficult to make sense of the maze of rooms which forms Group 18 (Starr, 1939, 310; S178, S178A, S164, S165, S161, S155, S156, S153, S123, S131, S126, S122, S319 and S104) or Group 19 (Starr, 1939, 313; S152, S183, S133, S182, S137, S129, S128, S124, S112, S137B, S167, S130, S160, S166, S139 - 138, S141, S132 and S136). Group 18 probably started life as at least two

separate houses, one on Street 12 with a courtyard S165 (from which a drain leads to the street) and a main room S155, and another to the north-east whose main room was probably S153. The original core of Group 19 would have been the courtyard S133; the main rooms S137 and S137B are re-used from an earlier level and are much lower than the rest of the house, hence the steps up from S137B to S167. The group of four rooms S132, S136, S141 and S139, as indicated by the tablets found within it, formed a self-contained unit within the house, as did the rooms to the south-east. These two room-groups would not have been very much smaller than Group 20 (Starr, 1939, 316; S395A, S395, N393, N171, N358, N373 and N392), whose paved and drained courtyard, main room N358 and lavatory N392 make it one of the best-equipped houses of the quarter despite a slightly crooked outline.

The tablets found in the private houses indicate that they were the homes of private families quite unconnected with the palace (Lacheman, 1974, 368), unlike the four large but incomplete houses excavated outside the city, which contained administrative documents; the 'house' of Shilwa-Teshup is effectively a palace in terms of size and arrangement (Starr, 1939, Vol. 2, Plan 34). The size and structure of the private families is not known, but the areas of the houses and the rooms within them suggest that most were occupied by more than one nuclear family unit. Unlike other large house areas such as the 'Proto-imperial' Stratum Va at Tell Asmar and the AH quarter of Larsa period Ur

(see Chapters 5 and 6 and fig. 158), Stratum II at Nuzi has no houses under 50 metres^2, and the most frequently observed house size falls in the range 151 - 200 metres^2. The ideal plan of the Nuzi builders, to which the houses of the south-west area, and in particular Group 3, most closely approximate, bears little resemblance to the court-yard houses of Ur and Tell Asmar. The focal point of the house here is the main room, usually the largest room of the house, which was kept relatively free of household equipment, often provided with a hearth and its own small store-room and sometimes decorated with wall-paintings. In the better-planned houses, like those of the south-west section, there is separate access to the main room with its attached store and to the living and storage rooms of the rest of the house, and even in the less regular houses of other areas which have been subject to the usual pro-cesses of expansion and contraction, there are signs that the main-room plan originally prevailed.

Among the houses which do not conform to a regular plan are Groups 9, 18 and 19, which seem to consist of several distinct units thrown together. In Group 19 the tablets found in S139, 136, 132 and 141 provided evidence that this unit was leased separately from the rest of the house, and one might guess that these dwellings fulfilled the role of the single-family housing found at earlier sites further south; they may have been in effect horizontal blocks of flats, occupied by unrelated families sharing access and courtyard facilities.

It is unfortunate that there is little material with which to compare Stratum II at Nuzi, either from earlier northern sites or from contemporary levels in the south. The identification of rooms and courtyards is not always very secure, but it seems certain that at Nuzi the central point of the house was a main room and not a courtyard. It should be borne in mind that the houses of Stratum VI at Tepe Gawra described in Chapter 5 (fig. 138), though ruined to their foundations, were clearly not of courtyard plan, although without further investigation in north-eastern Mesopotamia it is not possible to know whether the architectural traditions of Nuzi and Tepe Gawra are related.

The parallel between the main rooms and modern Iraqi mudhifs has already been drawn; both are arranged with the entrance, which is often situated in the short wall, at the opposite end of the room to the hearth. In the Iraqi mudhif a complex and delicate code of etiquette determines the seating plan, with the places of honour at the end furthest from the door, and at Nuzi the importance of this end of the room was sometimes emphasised by wall-paintings. Since even the largest houses have only one main room it presumably served as a gathering-place for all the inhabitants of the house, and perhaps as a room for entertaining guests as well. Like the modern guest room, it was usually accessible separately from the rest of the house, but one cannot determine whether this arrangement was made at Nuzi with the intention of ensuring the privacy of the women of the household, as is the case in modern

houses. There is no evidence in the courtyard houses that such privacy was considered desirable; the largest rooms are not discreetly positioned next to the door, like the modern guest room, but are usually on the opposite side of the courtyard to the entrance.

It is more difficult to estimate the population of the housing area at Nuzi than it was to estimate that of earlier areas of courtyard housing at Ur and Tell Asmar. Despite the large area excavated, many houses are incomplete and only sixteen are known in more or less their original form. Living-rooms are difficult to identify, and many of those which would elsewhere have qualified on grounds of size should probably not be included, either because they are doorless and would seem to be excluded by difficulty of access and lack of space for the storage of bedding, or because the presence of large jars identifies them as store-rooms. Main rooms should probably be included, since their hearths would have made them comfortable sleeping-places in the cold northern winter. A tentative identification of living-rooms would produce a range of 188 to 470 inhabitants for these houses, based on the figures of 4 to 10 members per family unit used in Chapters 5 and 6. These sixteen houses represent only 37% of the total area of housing excavated, about 8% of the total city area, and it would be rash to assume that they are entirely representative, but if the same density had prevailed throughout the city, excluding the streets, temple, palace and administrative buildings, Nuzi might have had a population of between 1000 and

2500, plus any inhabitants of the official buildings. It should be stressed that this figure is highly unreliable, and the incomplete state of many of the houses excavated makes it difficult to compare these figures with those for Stratum Va at Tell Asmar (Chapter 5) or the Larsa period AH quarter at Ur (Chapter 6), where the majority of the house plans were relatively complete. The sixteen fairly complete houses of Stratum 11 at Nuzi represent c. 3500 metres^2, but this does not include streets, open areas or shops, and although 188 - 470 occupants in c. 3500 metres^2 of housing falls into approximately the same range as 148 - 370 in c. 2500 metres^2 at Tell Asmar or 428 - 1070 in c. 7300 metres^2 at Ur, it may be that all that this reflects is a relatively stable proportion of rooms measuring c. 2 x 2 metres in relation to overall housing area. The figures from all three sites seem very high, and further studies of texts from housing areas may provide a more realistic and accurate basis for calculating occupancy levels. It is also to be hoped that future excavations in northern Iraq will throw more light on the history of a house form which differs so radically from the better-known courtyard house.

In the circumstances, it may be legitimate to look further afield for comparative data. The texts from Nuzi make it clear that the population was predominantly Hurrian-speaking, and among near contemporary excavated sites

Tell 'Atshana in northwest Syria is the only one where finds of tablets indicate a significant Hurrian element in the population (Woolley, 1955). Unfortunately, the housing remains of the relevant levels were on the whole poorly preserved, and walls were ruined to foundation level or missing altogether, so that few doorways were preserved and no complete plan was recovered. In the circumstances, it is difficult to compare these houses with those at Nuzi, although there are some obvious differences such as the use of rubble foundations and the greater size of the Alalakh houses, all of which were over 200 metres^2 despite being incomplete. The best-preserved example, House 37 of Level IV, was over 500 metres^2, possibly two-storied, and built around a central courtyard (Woolley, 1955, fig. 62). It possessed a feature not found in any other private house at the site, an unusually wide doorway (3.30 metres) with basalt orthostats. In combination with its size, this suggests that it was some sort of official residence. There is no resemblance in layout even to the large suburban dwellings at Nuzi, nor is it possible to discern any similarity between the other, admittedly incomplete house plans and those from Nuzi, with their characteristic circulation plan centred upon the guest-room. The evidence, such as it is, does not support the suggestion that the peculiar character of the domestic architecture of Nuzi is attributable to Hurrian affiliations.

TABLE 6: KASSITE PERIOD HOUSE AREAS

Ur, E.M. Site:	High House	207 metres^2	
Ur, K.P.S. Site:	House A	193 metres^2	
Nippur:	House D	121 metres^2	
Nuzi, N.W. Ridge:			
Stratum III	Group 2	405 metres^2	
	Group 4	300 metres^2	
Stratum II	Group 23	172 metres^2	(incomplete)
	Group 24	409 metres^2	(incomplete)
	Group 25	176 metres^2	(incomplete)
	Group 32	135 metres^2	
	Group 35	156 metres^2	(incomplete)
Nuzi, S.W. Section:	Group 2	245 metres^2	(incomplete)
	Group 3	196 metres^2	
	Group 5	141 metres^2	
	Group 6	162 metres^2	
	Group 8	154 metres^2	
	Group 9	208 metres^2	
	Group 10	161 metres^2	
Nuzi, S.E. Section:	Group 15	272 metres^2	(incomplete)
	Group 18	418 metres^2	(incomplete)
	Group 19	385 metres^2	
	Group 20	98 metres^2	

CHAPTER 8

Conclusions.

The history of domestic architecture in ancient Mesopotamia is far from complete. Throughout the period covered by this study there are often large areas which are virtually unknown, such as the whole of southern Mesopotamia in the 'Ubaid and Uruk periods, when crucial developments in the formation of the early cities were taking place. There are a number of reasons for these lacunae - the accidents of excavation, lack of interest in other than monumental architecture and the presence of great accumulations of later material - but future excavation will be able to fill in at least some of the gaps.

It is less easy to contemplate with equanimity the record of archaeological publication in this field. It is true that Near Eastern archaeologists often work in very trying conditions, that they have often been understaffed and that their funds are perennially meagre. Nevertheless, the publication of Mesopotamian excavations has so far fallen short of what might have been hoped for in both quantity and quality, and is often as revealing of the prejudices of the excavator as of the practices of the original occupants. German expeditions, on the whole, have tended to publish architectural features meticulously, with detailed measurements and brick-by-brick plans; French expeditions are notable for vividly imaginative writing and an interest in kilns,

ovens and kitchens generally; Russian archaeologists have a keen eye for communal and industrial structures and the British and Japanese have a curious bias towards ritual, often interpreting as temples structures which appear indistinguishable from ordinary dwelling-houses.

More serious is the apparent inability of archaeologists of all nations to produce reasonably coherent, detailed and accessible information on a site within even twenty years of its excavation. Of the early prehistoric sites discussed in Chapter 3, the majority are known only from preliminary reports and although some of these are models of lucidity and clear illustration, others are the reverse. The excavation of the 'proto-Hassuna' sites of the Sinjar plain, including Umm Dabaghiyah and Tell Sotto as well as others which have yet to be published is particularly interesting. In this and the Hassuna period proper the cultures of this area appear to have had a sophisticated economy, with a high degree of specialisation and the ability to accumulate and store a considerable surplus. The appearance of circular buildings at Hassuna and Yarim Tepe I might indicate that the forerunners of the Halaf culture were already present in this period and co-existing with other groups; although the circular house form is characteristic of the Halaf culture, rectilinear buildings also formed part of its architectural repertoire and at Yarim Tepe II there are indications that some of the features of Hassuna architecture, if not elements of its population, survived the change in other aspects of material culture.

There are no signs of any links between the Samarran building tradition and those of the Halaf and Hassuna cultures, except at the northern (perhaps transitional) site of Matarrah. Such connections as exist seem to be with the succeeding 'Ubaid culture, which shares the use of mud brick and a preference for symmetrically-balanced plans. It is not possible to trace any direct development, however; the housing remains from the 'Ubaid period in the south are almost non-existent and give no clear idea of the nature of the house plans, and when the 'Ubaid appears in the north at Tepe Gawra its users occupied irregularly-planned houses, more like those of the Hassuna sites than the strictly proportioned Samarran buildings, which existed side by side with Halaf tholoi. In Stratum XV at Tepe Gawra there appears for the first time a distinctive house plan which is found at other 'Ubaid sites and is strongly reminiscent of the buildings of the first two levels at Tell es-Sawwan, although in view of the long interval between the two and the presence of other types of plan it is difficult to claim that there was any direct connection between the two, or to establish the nature of the link, if any, between later tripartite temple plans and house plans. The Samarran house plans seem to have been consistent within each site, but in the 'Ubaid smaller, irregularly-built houses are found in addition to the well-planned houses with their symmetrically-arranged rooms on either side of a central space and their characteristic stepped outline.

It seems very probable that the 'tripartite' houses which appear in the Uruk period at sites from Tepe Gawra to Habuba Kabira evolved from the 'Ubaid houses with stepped

outline, although there is disagreement over the central space; the excavators of 'Ubaid houses tend to envisage it as an open courtyard, those of Uruk houses as a roofed central room. In successive levels at Tepe Gawra large, carefully-constructed tripartite houses are found alongside small houses which show few signs of coherent planning, and although at Habuba Kabira most of the houses seem to consist of variations on the tripartite form there is a considerable range of sizes. It is suggested that these differences in size and plan reflect distinctions in status and wealth, the larger, better-planned dwellings housing the extended families of those who controlled the greater part of the community's wealth; it is interesting that in Stratum XII at Tepe Gawra the largest house, the White Room House, is built across a semi-enclosed square from a large building which might have been a storage unit. This is reminiscent of Umm Dabaghiyah, where a group of houses was attached to each of the two storage ranges, but the earlier prehistoric settlements display few signs of status distinctions; it does not of course follow that they did not exist. Enclosure walls around groups of houses at Yarim Tepe 1 and Choga Mami may have bounded extended family or tribal compounds, but on grounds of size and numbers of living-rooms it seems unlikely that most prehistoric dwellings housed more than a single nuclear family, the exception being the buildings in Levels I and II of Tell es-Sawwan. If they were houses, these buildings were sufficiently large and contained enough suitably-sized rooms to have held extended families. In the following level, however, there appears to be a return to single-family units.

Level IIIA at Tell es-Sawwan, although without any apparent distinctions between the houses of its inhabitants, resembles Habuba Kabira in having a large defensive wall, suggesting that the significant distinction was between those inside and outside the wall. The organisation of the settlement at Habuba Kabira, which apparently included details such as street-cleaning, argues that a high level of co-operation, if not a centralised authority, was in operation, and the existence of large temple and/or administrative complexes at Uruk sites is an indication that a more complex economy had evolved. The small, semi-independent household living off its own produce was no longer the only economic unit, although the proportion of the economy controlled by the large estates which were probably already forming in the 'Ubaid period is a matter for debate.

Once again, there is little evidence from the extreme south in the early historical periods and it is impossible to know whether the tripartite Uruk house is in any way related to the square-plan house, with rooms on each side of a central courtyard, which forms the ideal house of Mesopotamian builders at least until the end of the Old Babylonian period, or whether the courtyard house developed separately, perhaps from a common ancestral architecture. There is little evidence, at the Diyala sites or elsewhere, of large socio-economic units dominating society; the areas of town plan revealed at Tell Asmar, Mari and Tell Taya suggest that society was not rigidly stratified, that there was a wide range of household sizes and incomes and that there

were small craftsmen and shopkeepers operating independently within the cities. There are clear signs at Tell Taya and Tell Asmar that plots of land which had originally accommodated large, square courtyard houses were subdivided to produce several smaller houses, a process which is most clearly seen in Stratum Va at Tell Asmar. On the basis of the identification, mainly by size, of living-rooms, it seems likely that the linear-plan houses should be identified as the dwellings of single, nuclear families, the square-plan houses as the dwellings of extended families, and some attempt may be made to estimate the population of the area using the range of 4 - 10 members per nuclear family suggested by ethnographic studies. There is no clear distinction in size between the two house types at Tell Asmar; as the histogram in figure 158.1 indicates, there is a considerable overlap in areas.

In the following phases of Mesopotamian history until the end of the Old Babylonian period the preference for the square-plan house persisted, the implication being that the patriarchal extended family was considered the ideal unit of society, although like all ideals it was often unattainable. Studies of texts from houses at Nippur support the contention that square-plan houses held extended families and were subdivided to form dwellings for individual family groups. At Ur, the difference in size between the square-plan and linear-plan houses of the AH quarter is marked (fig. 158.2), but the impression given by the house areas at Nippur is that the difference between the two types was not so pronounced there. The houses of the EM site at Ur are also large

and mostly square-plan, and one wonders how typical of the city as a whole these quarters were, since there are references in the report to less well-preserved areas not worth recording both inside the city walls and in the 'suburbs' outside. It would be interesting to be able to compare houses from areas inside and outside the walls, since it might be expected that land in the walled city would be more valuable and space more restricted; it would follow that the walled city would tend to consist of the houses of the wealthiest citizens, with craftsmen and labourers relegated to the outskirts. On the other hand, it is possible that the crowding, dirt and heat of the city set up a centrifugal force which would have pushed the wealthier citizens out to build houses in the cooler, healthier suburbs.

Some signs of such a process are present at Nuzi in northern Mesopotamia, which is almost the only site throughout the period of Kassite rule to produce large-scale evidence of domestic architecture. The absence of architectural remains at the southern sites in this period is disconcerting and cannot be entirely attributable to erosion and destruction by later building activity, although more evidence will be available when the results of work now under way are published. At present, it seems that the courtyard house retained its popularity but that the population of the cities had declined. At Nuzi, a radically different type of house plan appears which is dominated not by a central courtyard but by a main room, accessible separately from the rest of the house. The different pattern of circulation thus produced runs round

the outside of the house, unlike that of the better-known type of house in which rooms open directly off the courtyard. This unfamiliar style of domestic architecture and the range of house sizes, with no very small houses and a definite preference for one size range (fig. 158.3), presumably imply that the builders had a different social structure and perhaps a different ethnic affiliation from the peoples of southern Mesopotamia in the historical periods hitherto considered. Without comparative material it is difficult to place Nuzi in perspective, but it may be worth remembering that the houses of Stratum VI at Tepe Gawra (fig. 138) discussed in Chapter 5, although ruined to their foundations, were clearly not of courtyard plan and it may well be that this area had its own architectural traditions about which we know little so far.

It was suggested in Chapter 2 that the evidence of anthropological and ethnoarchaeological surveys of modern Near Eastern villages indicates, not only that they vary from region to region, but that they have altered with the passage of time, and analogies drawn from them cannot justifiably be considered continuous with respect to prehistoric villages. Such surveys can, however, furnish useful information on traditional crafts and technology, some of which may be applicable to archaeological material. The essential techniques of building in mud brick alter relatively little, and as we have seen the same method of constructing a flat roof with poplar beams, brushwood and

packed mud plaster which was employed at the 'Ubaid site of Tell Mefesh is still in use in the Near East today. The fact that new building and repairs are mostly likely to have been undertaken in late summer or early autumn, when the harvest is over, the grain threshed and stored and straw is available as a temper for bricks and plaster, may have implications for relative dating, and the number of replasterings can help to establish the life span of a building. It should prove possible to differentiate courtyards, stores and living-rooms by the nature of their flooring and the function of a room may be identified by analysis of its contents, on the rare occasions where these have been preserved intact by some disaster such as a fire; if living-room and storage space can be distinguished it should be possible to define differences between households in terms of wealth and size more sharply. A knowledge of local communities is also useful in reminding the archaeologist that the past was probably more complex than any of his explanations admit.

As we have seen, population figures are not available for Mesopotamia or other areas of the Near East from a period before contact with international trade and commerce began the transformation in population structure and numbers which is still continuing today. Detailed statistics on towns and cities exist only for a period after the effects of industrialisation and increasing affluence had brought about radical changes in public

health, education, transport and architecture. Very little is known of the Mesopotamian demographic system in earlier times, but it seems likely that, just as the climate and environment differ from those of surrounding areas, so would the demographic pattern; the evidence also suggests that following the decline of Abbasid rule, the Mongol invasions and absorbtion into the Ottoman Empire the country endured unprecedented impoverishment.

Population growth and its role in the development of agriculture or the urbanisation process are problems which have preoccupied many archaeologists, but the various methods of calculating settlement population discussed in Chapter 2 all share the weakness that the number of people in any chosen unit is not archaeologically verifiable, so that any estimate depends ultimately upon a guess. Attempts to find a correlation between floor area and population have not been entirely successful; the mathematics of Naroll's original study (1962) have been questioned, and while it appears that in modern villages the proportion of living space per person remains constant at a local level, no satisfactory universal constant has been discovered. Other possible means of calculating population levels, such as the use of figures for grain consumption (e.g. Kramer, 1978), raise archaeological problems; one does not always know how many bins were in use at once, what was the original height (and therefore volume) of a

bin, what was being stored and whether alternative storage methods (e.g. sacks) were also in use.

In modern communities, each married couple and their unmarried children are ideally allocated a separate living-room, and textual evidence in conjunction with the archaeological record supports the hypothesis that this practice also existed in ancient times. The problems remain of identifying living-rooms, since doing so by size alone almost certainly produces an overestimate, and of arriving at some idea of the average size of family in a given city at a given period. In calculating approximate population numbers for the excavated housing areas, a range of 4 - 10 persons per nuclear family was used, based upon textual evidence and supported by modern figures. The use of such a range for all sites of all periods would of course obscure just those fluctuations in population which are likely to be of most interest, but without more information on the demographic system in ancient Mesopotamia, including a better knowledge of factors such as infant and child mortality, life expectancy and the age of women at marriage, it is unlikely that we shall ever be able to achieve more than very crude overall estimates of gross population numbers, in which calculations of city population based on excavated house areas are taken together with estimates based on areal surveys.

The Question of Continuity

Although this thesis is only concerned with the development of domestic architecture in Iraq until the Kassite period, it is instructive to close with a short review of subsequent developments. This is relevant, not only for current ethnoarchaeological studies, but for students of Islamic urbanisation and domestic architecture, some of whom have claimed that there is extensive continuity from pre-Islamic to recent times. One writer has argued that Near Eastern cities of the Mediaeval and early Modern periods show many resemblances to those of Europe, the consequences of a common inheritance from the cities of Classical antiquity and of many cultural contacts since, while at the same time claiming that features inherited from the cities of ancient Mesopotamia survived to be spread by Islam and produce the characteristic 'oriental' city (Wirth, 1975, 45). The question of the nature or even existence of the 'Islamic City' is a complex one with an enormous literature (see, for example, the bibliography in Bonine, 1977), and any overview, however brilliant, which is essentially based on physical features alone is likely to obscure the real and profound differences which exist between cities in different parts of the Islamic world.

The conquering Arab armies of early Islam rarely founded new cities, settling instead in existing cities or villages.

The new cities grew out of temporary camps, like Basrah, Kufa or Fustat, or were founded as administrative capitals, like Baghdad. Two parallel traditions were created, Arab and non-Arab, Muslim and non-Muslim, and it was not until the eleventh and twelfth centuries that the two traditions merged as a result of the conversion of most of the population to Islam. By this time, the basic institutions of urban society were the slave-dominated state with its army of foreign slaves, the quarters occupied by village-like communities, and religious communities in the form of schools of law (Bonine, 1977, 150 - 152; Lapidus, 1969, 47). The essential characteristics of Muslim towns are usually listed as: the absence of city states and municipal self-government; the co-existence of different religious communities in separate ghettos; the partitioning of the city into quarters with inner walls and gates; and the concentric layout of the market, with 'noble' crafts nearest the mosque and 'baser' trades on the outskirts (Issawi, 1969, 107 - 108).

As in many societies, Muslim attitudes to the city are highly ambivalent. On the one hand, 'For Muslims, cities often possess a special sanctity and are regarded as the sole places in which a full and truly Muslim life may be lived.' (Lapidus, 1969, 47); on the other hand, 'The city dwellers have, it would seem, no virtues .... those nomads who move to the city are invariably corrupted. The city is positively associated with "civilisation",

and yet it is also unwholesome and effete ....' (Gulick, 1969, 142). The two attitudes have in common contempt for the life of the peasant and esteem for the noble purity of nomadic existence.

The Islamic city thus differs in several important respects from what is known of the city in ancient Mesopotamia. The city state is the dominant political unit in the early history of Mesopotamia, and according to Oppenheim, cuneiform sources betray no trace of hostility towards the city, although this may hardly be surprising in documents prepared by and for a section of the population inextricably committed to urban life (Oppenheim, 1964, 111). There is no sign of contempt for peasant life: only nomads and mountain-dwellers are despised for their uncouth customs. Oppenheim also states that there is no trace of any tribal organisation such as may be found in later Muslim cities (1969, 7), but while it is true that there is no archaeological evidence for separate, walled quarters within ancient cities apart from Houses 1 at Khafajah (fig. 132), a unique, atypical response to a period of unrest, one may infer the importance of kinship groups in cities in both the Early Dynastic and Akkadian periods (Diakonoff, 1959, 1972; Gelb, 1967, 1972, 1979) and in the Old Babylonian period (Stone, 1982; Harris, 1975). Gibson has discussed the role of the tribal system in Mesopotamian irrigation agriculture, pointing out that its built-in social instability and adaptability combine well with the

type of shifting, extensive cultivation which conditions in the area favour, since risk and profit are shared evenly through kinship ties (1974, 7 - 17; 1976, 54). Interference from outside the system by central government creates a tendency for wealth to be concentrated in the hands of a few wealthy landlords; tenants and poor farmers, running increasingly into debt, abandon the fallow system, agricultural yields decrease, less investment is put into irrigation and greater reliance is placed on trade and warfare to offset the decline in agricultural revenues. In time, economic decline brings about a relaxation of state control and tribalism and agriculture revive.

Evidence of this cycle at work may be seen several times in the course of Mesopotamian history; within the period covered here, one may point to the end of the IIIrd millennium and the Ur III period, when the state came to control virtually all capital and the sale of land by a private individual generally signalled his descent into bond slavery (Lamberg-Karlovsky, 1976, 67 - 68), and again in Old Babylonian Nippur, where changes in property ownership from communal to individual holdings contributed to the polarisation of wealth and ushered in a period of increasing hardship for small farmers (Stone, 1977, 167; 1982, 50). Parallels such as that drawn by Adams (in Lapidus, 1969, 188 - 189) between the presence of tribal units and an elite of ruling families in Old Babylonian Sippar and in eleventh and twelfth century Islamic cities

should probably be seen, not in terms of continuity of settlement structure, but as variations upon a theme, recurrences of a type of social organisation well adapted to local conditions in the intervals between which alternative systems were in use.

In some physical respects there are resemblances between the ancient Mesopotamian and traditional Islamic city. Both were walled, and both had a pattern of broad main streets connecting gates and major buildings, with narrow alleys and culs-de-sac flanked by blank, windowless walls providing access to residential areas. The central suq of Islamic cities, arranged according to craft divisions, was not a feature of the ancient city. No ancient 'harbour' area has been excavated, and one may speculate whether the karum was primarily a place or an institution. Independent small shops and workshops existed, for in successive levels the excavated house area at Tell Asmar contained a shop, bakery and metal- and stone-workers' establishments (see Chapter 5), while in the AH and EM quarters of Larsa period Ur there were shops, a school, a workshop with furnaces and a food shop (see Chapter 6). Texts from Old Babylonian Sippar refer to shops and taverns, usually located on the City Square or on a wide street (Harris, 1975, 20). Most manufacturing and craft activity, however, probably centred upon the great households of the temple and palace, for which there are no Islamic equivalents.

Wirth has suggested that, in addition to continuity in city plans between ancient and Islamic cities, there has been considerable continuity between ancient houses and the traditional town house of the area (1975, 75). Writers on traditional houses such as Sinjab (1965), Reuther (1910) and Langenegger (1911) have not attempted to trace their historical development, restricting their studies mainly to details of architectural form and decoration, and of the functions of the various parts of the house. It is true that the courtyard house has a long history in Iraq, from the Early Dynastic until the beginning of this century, when it began to be replaced by European-influenced architecture which was often totally unsuited to the climate of the country. Courtyard houses are also found in other areas of the world with short winters and long, dry summers; they occur throughout the Mediterranean region and in parts of South America and China. Wirth argues that the courtyard house reflects a society which is fundamentally inward-looking, in which loyalties are focussed upon a family unit which must be protected from contamination by outsiders. The occupations of daily life are carried out in the privacy of the courtyard, access to which is regulated by a single entrance. It should be pointed out that the absolute privacy of the Muslim house is protected by law, and it can be a punishable offence to stare at one's neighbour's roof. In contrast, a completely roofed house necessitates the performance of daily chores in the open, in communication

with the rest of the neighbourhood. It need hardly be said that the one is not so private, nor the other so public, in practice as in theory.

It cannot be assumed, however, that continuity in one aspect implies that all the other aspects of domestic architecture, including patterns of use and occupancy, remained unchanged. Even the most cursory survey of domestic architecture in Mesopotamia from the end of our period until the present reveals important changes. Neo-Babylonian houses at Ur (Woolley, 1962, Plate 71) and Babylon (Reuther, 1926, taf. 17) differ from those of earlier periods. Although still single-storied, they are larger, and their outer walls have a curious saw-toothed outline. In many rooms, the door is positioned centrally in a long wall, producing a broad-room plan in contrast to the long-room plan preferred in most previous periods. Intercommunicating rooms are more common, and the arrangement of doors to face each other across the courtyard reveals a love of symmetry which has not been so much in evidence since the Uruk period. The most novel feature of these houses, however, is the occurrence of a house plan in which there are separate suites of reception rooms opening off a public courtyard and living rooms opening off an inner courtyard. A similar arrangement occurs in Neo-Assyrian houses at Aššur (Preusser, 1954, taf. 9), although with some differences in the location and circulation pattern of the suites (Sanders,

1979, 391). Sanders finds more concern for the articulation of distinct public and private areas in the northern, Neo-Assyrian houses, a fact which is of some interest when one remembers that the houses at Nuzi revealed a similar concern. This is, however, the first appearance of a distinct division between public and private areas in the Mesopotamian courtyard house.

Successive conquerors of Mesopotamia brought their own influences to bear upon the domestic architecture. Under Greek rule, the city of Seleucia was laid out in regular rectangular blocks in the usual Hellenistic manner. Level III shows how the Greek house type was adapted to the Mesopotamian climate, with the abandonment of the peristyle around the court and the arrangement of the prodomos with its columned portico to face north rather than south (Manasseh in Waterman, 1933, 28 and figs. 1 and 5). In some cases, the megaron became subordinate to the prodomos and was built on the side. In the succeeding Level II, Parthian influence made itself felt, and although the basic ground-plan of Level III was followed faithfully, the megaron groups became vaulted open iwans and the column disappeared as a structural element. By Level I a new type of architecture had arisen which developed into the forerunner of Sassanian architecture.

There is little contemporary documentation on early Islamic

vernacular architecture. Muhammad's house at Medina seems to have been similar to modern village houses, with rooms opening off an enclosed courtyard. The Prophet is said to have warned his followers against undertaking building works. Some of the conquering Arab armies were certainly recruited from nomads with no architectural tradition, but others were from the commercial centres and settled villages of Arabia and were heirs to an established tradition of building, and although they may have lived in tents or reed huts while on campaign, they were prepared to adopt an urban way of life in their newly-conquered territories. In Iraq, this involved following some at least of the building traditions of their Sassanian predecessors, notably the arrangement of triple **iwan** preceded by triple-arched portico which may be seen at Ukhaidir and Samarra and in the housesat Fustat in Egypt, constructed c. A.D. 900 by Iraqi followers of Ibn Tulun (Creswell, 1932, 386; 1940, 366).

The excavated houses of Samarra (c. A.D. 836 - 891) were more like palaces in size and appointments. Some had as many as fifty rooms, with separate courtyards for men and women and a fixed scheme of room groupings, although like the houses at Fustat they were single-storied. Windows were filled with disks of glass and rooms (and, exceptionally, courtyards) were richly decorated; a few houses had open, columned halls and ventilated underground rooms (serdabs). The requirements of Islam concerning

ablution were catered for by baths and drains in every house, and often a well, constructed in baked brick. Walls were of mud brick or pisé, with the usual flat roof (Creswell, 1940, 282 - 3).

Little seems to be known of the earliest houses of Baghdad, the capital founded in A.D. 762 by the Caliph al-Mansur. According to Le Strange, the houses were of mud brick (1900, 1); the absence of any description of them by the great Arab travellers such as Ibu Battuta leads one to suppose that they were entirely unexceptional. Pether-bridge points out that the manuscript illuminations which depict houses tend to be schematic and largely uninform-ative, and although those of the Maqamat of al-Haririare more explicit than most, and seem sometimes to show a second storey, galleries and wooden ventilators, archi-tectural detail is naturally secondary to the overall decorative scheme (1978, 194 and Plate 28). It nevertheless seems clear that by the thirteenth century some town houses had timber-framed upper stories.

In 1258 Baghdad was sacked and the Caliphate overthrown by Hulagu Khan, accelerating the decline which had begun towards the end of the period of Abbasid rule. The sacking of Baghdad in 1401 by Timur the Lame was less catastrophic than that of 1258 only because the magnificence of the city had declined so dramatically. Longrigg paints a dismal picture of the city in 1500, with the most

pretentious buildings the barracks and palace of the governor, the markets, public baths and barracks surrounded by 'shabby, huddled, one-storied houses' (1925, 10). The story of decay is continued by one of the earliest European travellers, the German Leonhart Rauwolff, who visited the Near East between 1573 and 1576, and was therefore in Baghdad about forty years after it had been occupied by the Turks. A translation of his account was published by John Ray in 1693:

'The Town Bagdet, belonging to the Turkish Emperor, is situated on the most Easterly part of his Dominions, is on the rapid River Tigris, and the confines of Persia, in a large Plain, almost like unto Basle on the Rhine, it is divided into Two Parts, which are rather bigger than Basle, but nothing near so pleasant, nor so well built, for the Streets thereof are pretty narrow, and many Houses so miserably built, that some of them are down to the first Story, and others be quite in Ruines.'

The horrific experience of crossing the famous bridge of boats seems to have occupied the minds of subsequent European visitors to Baghdad to the virtual exclusion of other details. Edward Ives, writing in 1758, left an account which suggests that the city had at least partially recovered from the depression of the sixteenth century, although he noted that 'the common houses are quite suffocating' and that the narrow streets of Basrah 'stink

abominably' (1773, 4, 279). Another eighteenth century traveller, John Jackson (quoted in Petherbridge, 1978, 196) left a detailed description of the houses he saw from which it seems that the serdab and galleried second floor were now widespread; he also describes the arrangements for separation of visitors and harem. In 1822 Sir Robert Ker Porter wrote of Baghdad: 'The outward fashion of the houses, bore an aspect new to me in the East. They are built in different stories, with window-openings thickly latticed; which style giving them a European appearance, I felt a kind of welcoming old acquaintance-ship in looking at them; that, perhaps, made me prefer their height before the low Asiatic dwellings I had left in Persia' (1822; Vol II, 244).

The evolution of the town house of Iraq since the coming of Islam is a complex subject and one which deserves more attention. It seems that the early Arab conquerors borrowed some elements from their Persian predecessors, while at the same time adding distinctive Islamic features. Some of these, such as the reception room for guests and the separation of public and private areas of the house, are foreshadowed in Neo-Assyrian and Neo-Babylonian houses, but there is no sign of such a division in the courtyard houses of earlier periods. Houses of more than one storey seem also to be a late development. Mud brick and pisé are not well-suited to multi-storey building in the Iraqi climate, and it is probably that only the wealthy could

afford a timber-galleried upper floor. After the dark age of economic decline and Mongol invasion, during which all or most of the population of Baghdad seem to have resided in single-storey mud brick houses of depressing aspect, conditions improved, and by the eighteenth century travellers were describing the galleried courtyard houses which were a prominent feature of Iraqi towns until superseded by European-inspired blocks, the traditional form described by Reuther (1910), Langenegger (1911). Al-Azzawi (1969 and Krunic (1962; 1964). Their origin is not entirely clear and may owe something to the multi-storied tradition of the Yemen, but it seems highly probable that the galleried houses of Baghdad were strongly influenced by Turkish traditions, particularly in wood-working, while the houses of Basrah have features in common with the vernacular architecture of the Gulf Coast. It should be emphasised that multi-storied houses were never the rule in Baghdad. It is clear from the Admiralty Report for the First World War that multi-storey houses of baked brick were found only in the wealthier areas, and that the majority lived in single-storey houses of mud brick (1917 - 18; Vol. II, 377).

ABBREVIATIONS USED IN THE BIBLIOGRAPHY

Amer. Anth.	=	American Anthropologist.
J.A.O.S.	=	Journal of the American Oriental Society.
J.C.S.	=	Journal of Cuneiform Studies.
J.N.E.S.	=	Journal of Near Eastern Studies.
J.R.A.I.	=	Journal of the Royal Anthropological Institute.
M.D.O.G.	=	Mitteilungen der Deutschen Orient-Gesellschaft.
O.I.P.	=	Oriental Institute Publications.
P.P.S.	=	Proceedings of the Prehistoric Society.
S.A.O.C.	=	Oriental Institute of the University of Chicago, Studies in Ancient Oriental Civilisation.
T.P.R.	=	Town Planning Review.
U.V.B.	=	Uruk: vorläufiger Bericht.
W.V.D.O.G.	=	Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft.

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