Village on the Euphrates
Excavations at Neolithic Gritte in Turkey

Mary M. Voigt

Along the northern edge of the Mesopotamian lowlands lies a piedmont zone consisting of rolling plains with grassy steppe vegetation and occasional stands of oak. This area, lying between the mountains of the Anatolian Plateau and the arid steppe to the south, is sometimes called the "hilly flanks of the Fertile Crescent." It provides excellent farmland without the need for irrigation, as well as good pasture for domestic animals such as sheep, goats, and cattle. Near the eastern end of this zone, the Euphrates River cuts through chalky hills forming a valley 8 to 12 kilometers wide as it flows from its source in the Taurus Mountains in the north toward the Mesopotamian plain (Fig. 1).

During the past twenty years, a series of dams have been built across the Euphrates in Turkey, Syria, and Iraq. At present, the Turkish government is constructing two dams in Adiyaman and Malata provinces that will provide hydroelectric power, as well as water for a major irrigation scheme. The area within the projected reservoir includes rich alluvial plains that were important population centers during the past, and contain hundreds of archaeological sites. Because so little was known about the archaeology of the region, an emergency salvage program was begun in 1977, involving scholars and institutions from the United States as well as Europe and Turkey. As part of this program, excavations at the site of Gritte were carried out for four seasons (1981-1984) under the direction of Richard S. Ellis of Bryn Mawr College.

Gritte is a small mound located on the west bank of the Euphrates (Fig. 2). It rises 13 meters above virgin soil, and is composed of the remains of settlements dating from ca. 7000 B.C. to the 13th century A.D. Excavations have focused on the two periods best preserved at the site: a Medieval fortress occupied by Christians that covers the top of the mound, and an early farming settlement at its base. This article will report on the early farming or Neolithic settlement which has been tentatively dated from 7000 to 5000 B.C. (pending the analysis of a large series of radiocarbon samples).

The Neolithic deposit at Gritte was discovered in 1981 in a 3-meter-wide trench (Operation I) cut into the eroding river edge in order to document the archaeological sequence (Voigt and Ellis 1981). It lies under approximately 8 meters of later occupation debris. Given labor costs and constraints on archaeological budgets, this deposit would not be chosen for investigation under ordinary conditions of research. We were working, however, in an area that will be flooded by the new dam within this decade. From the small sample of artifacts recovered in Operation I, we knew that there were at least 4 meters of deposit dating to the Neolithic period, and that the people who occupied the site at this time had moved into the region from the south. Only two other Neolithic sites were known within the salvage area (Hayaz Höyük and Câfer Höyük). Grritte provided an unusual opportunity for the investigation of the initial occupation of this segment of the Euphrates by farmers and herders, and the evolution of their way of life as they adapted to a new environment.

Site Location and Resources

The site lies in close proximity to resources that were important to the first settlers. At the base of the mound, emerging from a conglomerate bed (rock composed of rounded pebbles and cobbles cemented together), are springs that yield a steady stream of cool fresh drinking water even in the hottest and driest months of a drought year. The surrounding land is nearly flat and easily cultivated. In the hills 3 to 4 kilometers away are bands of good quality nodular flint, a necessary raw material for the manufacture of chipped stone tools. These nodules occur in chalk and limestone beds which provided a source of easily carved stone. Cobbles of harder rock were to be found in nearby confit beds.

Both the hills and the plain were used by herds of large game animals, and provided good grazing for domesticated animals during the wet season in winter and spring. In the summer, when the temperature reaches 50°C in the shade and the natural vegetation of the plain is seared and dry, large flat islands in the middle of the river provide lush pastures. Although the Euphrates here is a broad swift river not easily crossed, modern villagers and their animals reach the islands by swimming, and float to the eastern bank of the river on rafts made up of inner tubes and/or scraps of wood. This crossing is of minor importance today, but must have been significant in Early Bronze Age and Medieval times when it was controlled by Gritte on the west and the large settlement at Lidan on the east. It may also have been used in Neolithic times as a means of traveling to related settlements located to the east and north (see below). Finally, growing along the river banks are trees, a valuable commodity for construction and fuel.

Excavation of the Neolithic Settlement

In order to limit the volume of earth that had to be removed by pick, shovel, and bucket to reach the Neolithic settlement, investigation of this period was carried out on the eastern edge of the mound where at least part of the later settlements (as well as some of the Neolithic village) had slid down into the encroaching river (Figs. 4, 5). This location had two other major advantages. First, excavated deposits could easily be disposed of down the slope at the edge of the excavation units. Second, buckets of soil could be carried down to the river bank and washed in screens.

1. Above the dam site, the Euphrates cuts through a gently rolling plain bordered by eroded chalk and limestone hills.

2. Gritte viewed from the river. All of the trenches cut into this side of the site have penetrated to the Neolithic deposit, a minimum of 9 meters below the summit of the mound. On the summit are a hut of reed mats built by the watchman, and a photo tower.
ensuring the recovery of small or fragile pieces of stone and bone. Twenty percent of the deposit was treated in this way. The pump that supplied water to the screens also powered one flotation device, a modified oil drum fitted with a shower head which washed carbonized plant remains from their matrix and deposited them in a piece of muslin where they could be dried and preserved for study (Fig. 3). As a result of two seasons' work, the entire Neolithic sequence to virgin soil has been documented, although only a small sample was obtained for the earliest/deepest part of the deposit. The maximum contiguous area cleared is about 210 square meters, located at the eastern end of the excavated strip. During the latest major phase of the occupation, this portion of the village contained three relatively well-preserved buildings constructed of mud brick. Building 2 was rectangular in plan, with the interior divided into a series of small rooms (Figs. 6, 7). Immediately adjacent to the south was a building with less substantial exterior walls, larger rooms, and a less regular plan (Building 1). To the north was a second well-built rectangular structure (Building 3) of which only a small section lay within the excavation area and which was disturbed by later pits. A small fragment of wall within the interior of Building 3 suggests that it may have been similar in plan to Building 2. A crumbling brick wall leading south from Building 3 enclosed an unroofed area which probably served as a courtyard for Building 2. The deposit inside Buildings 1 and 3 consisted of decayed mud brick, with virtually no occupation debris on the floors which were simply hard-packed surfaces. On the floor of Building 2, however, was a large collection of ground and chipped stone artifacts (see Figs. 16a, 20). Although there were no hearths or other features associated with Buildings 2 and 3, it seems most likely that they were used as houses. The difference in plan and construction of Building 1 suggests that it served some other function.

To the east of this group of buildings was an area with no architectural remains (see Fig. 5). The deposit here consisted of thin layers of sifted building material and trash which sloped down to the east. Based on the available information, we are not able to state whether this represents an open space within the village or an area on the village edge. This open area provided some of the artifacts, animal bones, and seeds recovered at Gritlelle, as well as direct evidence for a variety of activities. In some cases, bonfires seem to have been built on the surface, leaving patches of dark ash and occasionally chunks of charcoal suitable for radiocarbon dating. More complex features include carefully shaped oval or round pits filled with rounded cobbles and ash that were probably used for cooking (Fig. 8c). Since pottery was absent or very rare at this time (the few sherds recovered came from the latest part of the deposit), containers of stone or basketry must have been placed on rocks that had been previously heated, a method documented ethnographically for North American Indian groups.

A group of shallow, irregularly shaped pits filled with ash, angular cobbles, and large quantities of chipped stone tools and chipping debris were also found. Although these may have been simple trash disposal features, there is some evidence to suggest that they were used as part of a more significant activity, the heat treatment of flint. Approximately one-third of the chipped stone artifacts (both tools and waste or chipping debris) have a slight haster on the surface. Samples of raw materials with a similar color and texture obtained from flint sources in the nearby hills did not have this haster, but acquired it when experimentally heated. Thus a comparison of artifacts and raw materials suggests that the Neolithic people were heating flint to improve its flaking qualities. If the irregularly shaped pits were used for heat treating raw materials, the presence of angular (heat split) non-flint cobbles may be related to the regulation of temperatures, since nodules of flint placed directly in a hot fire simply explode, destroying their utility for controlled
**Plan of the latest well-preserved phase of the Neolithic settlement.**

**KEY**
- RED BRICK WALLS
- CRUMBLY BRICK WALL, POORLY PRESERVED

**LIMITS OF EXCAVATION**
- DISTURBED BY EARLY BRONZE AGE PIT
- DISTURBED BY EARLY BRONZE AGE BURIAL
- DISTURBED BY NEOLITHIC PIT

**Building 3**
- TRASH DEPOSITS SLOPING TO RIVER

**Building 2**
- DISTURBED BY EARLY BRONZE AGE PIT

**Building 1**
- DISTURBED

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**Sa-c**
One of the most common features in the open areas of the settlement is a round or oval pit filled with ash and layers of rounded cobbles. These photographs show one pit (a) before excavation, (b) with one layer of cobbles removed, and (c) when completely emptied.

**9a-c**
- Brightly colored rocks and minerals were slaked and polished to form beads and pendants.

**Plants, Animals, and People**

The study of plant and animal remains from Griffite has begun at The University Museum's Applied Science Center for Archaeology (MACA). Dr. Pamela Craik reports that within the sample of seeds recovered in 1983 from the latter part of the sequence, the most common cultivated plants were emmer wheat, lentil, and bitter vetch; barley and wild plants were present only in very small quantities. Analysis of the animal bones has been undertaken by Gil Shem, a graduate student in Anthropology at the University of Pennsylvania. Based on his analysis of a portion of the sample (over 2000 bones recovered in 1983), the Neolithic settlers at Griffite relied primarily on domestic animals for food, with sheep and goats comprising over 40 percent of the sample; pigs and cattle were less common (8 and 2% respectively). The age at which sheep and goats were slaughtered, with a high percentage killed before the age of two, is consistent with the use of these animals primarily for their meat rather than for dairy products. One other domestic animal was present, the dog.

Bones of wild animals were rare, but included large herd animals such as aurochs (wild cattle), wild goats, red deer, roe deer, fallow deer, and gazzelle, as well as hare. Although the small number of game animals in the sample suggests that hunting did not contribute greatly to the diet, the presence of many projectile points (arrow and perhaps...
10a–g
Figurines representing people and animals. a, r are of clay and f-g are chalk.

F
This small baked clay animal had ears and a tail as well as horns. Although the horns are broken away, their stumps indicate that they were long and curving (see Fig. 10c), allowing us to identify this artifact as a representation of a bull or cow. L. ca. 6.54 cm.

Use of Clay
In many of the stone-filled cooking pits were found lightly fired fragments of clay figurines. These have well-preserved surfaces but were usually broken in antiquity, perhaps as a result of throwing raw clay models into the fire. The animals can be clearly recognized, and show quadrupeds with sagging bellies (Figs. 10c, 11). Most seem to be cattle with long upward curving horns, but at least one has the curled horns of a ram.

The human figures are less conventional. The majority seem to be seated individuals with legs extended or crossed. Some are low-relief humanoids, and one is clearly recognizably human only within the context of the entire group of clay figurines. One of the most intriguing seated figures has plumage, a snake-like tongue, and a flat face with two eyes impressed with a sharp tool (Fig. 12a, b). Quickly nicknamed "E.T.", this small person has markings on its chest and legs left where some attachment (perhaps a child?) has broken away. A rare standing figure has stubby arms projecting slightly behind the torso which has a bulging area made of a separate lump of clay (Fig. 12a, b). At the time of recovery the stomach had broken away, revealing an impressed naval beneath matching that on the outer surface of the attached piece. Tiny talc-like feet project from beneath a skirt which was once decorated with pink-beaded eyes and gold earrings. Fragments of clay on the shoulders may indicate the presence of a necklace or perhaps hair. The latter hypothesis is supported by another fragment, a pinched, lizard-like head which had a coil of hair wrapped around its pointed skull. Two human representations were carved of chalk or soft limestone (Figs. 10d, e, g). A flat-faced head was pierced at its finished neck edge, perhaps for attachment to a body made of another material such as wood. A seated female with massive legs and globular feet was broken at the waist and had chipped areas on its feet (Figs. 10g, 14).

Studies of the use of small human and animal figurines among historic and modern groups in the Near East suggest that the clay figurines found in burnt cobble pits were used in rituals intended to protect people from unwanted situations or events (for example, poor health, bad weather), or to obtain a desirable result (pregnancy, good harvest). The chalk figurines may represent deities or figures used in teaching young people the values of life's complex community (Ucko 1968, Voigt 1968). Rare clay figurines of animals found in domestic contexts at Gilead have poorly preserved surfaces, with heavily worn feet and heads. These were probably children's toys.

Small geometric pieces made of lightly fired clay were found in the burnt cobble pits, as well as in the trash and silt layers of the open area (Fig. 15). In one case, at least 14 sun-dried clay spheres had been deposited in a cluster. Such artifacts have been interpreted as "tokens", evidence for a recording system that predated the invention of writing (Schmandt-Besserat 1978). Several clay cylinders were found with designs on one flat end, presumably for stamping designs on a surface (e.g., leather, fabric, human skin). One stamp has a spiral design which seems to represent a snake with a diamond-shaped head. Fired clay containers seem to have come into use only at the very end of the sequence, and were very rare. These pottery vessels were burnished on
The Chipped Stone Industry

The most common artifacts recovered were pieces of chipped stone, including retouched or utilized flakes and blades (tools), cores and core fragments, unused flakes and blades, and small chips (waste). A study of this material is being conducted by Dr. Richard Davis of Bryn Mawr College, with the assistance of Linda Kurtz (U. of Michigan) and Tineke Van Zandt (U. of Texas at Austin). At present approximately 15,000 of the estimated 80,000 pieces recovered have been described. The predominant raw material is good quality brown or cream colored flint from local sources; however, obsidian, a natural volcanic glass that had to be imported from sources on the Anatolian Plateau, is also relatively common. The slate obsidian is transparent and greenish black in color, attributes characteristic of obsidian sources around Lake Van in eastern Turkey.

The presence of distinctive types of flake debirs which result from the process of blade core preparation, as well as numerous flakes with areas of cortex or the outer surface of intact flint nodules, indicates that flint was brought to the village in the

16a,b
(a) A projectile point found in Building 2 is made of white flint, a type of material rarely used at Griel. (b) Stabilized blades, with sherd along the edges to the right produced by cutting cereals. The smaller artifacts have traces of linseed (a natural adhesive) used to set it into a wooden or bone haft along its opposite edge.
strong bevelled edges (borina) (Figs. 16–18). Such tools would have been used in hunting, harvesting cereals, the butchering of wild and domestic animals, the processing of animal skins to make rawhide or leather, woodworking, and the manufacture of tools and ornaments from bone and stone.

In addition to the information that the chipped stone industry provides on the technology and economy of the settlement, it also documents contacts with other regions. Griftille (as well as other nearby villages such as Hayaz Hüyük) lies at the northern end of a chain of sites (including Abu Hureya and Mureybi) that represents a progressive movement northward along the Euphrates by groups sharing a tradition of agriculture and material culture that apparently had its origins in the Levant (Israel, Jordan, and Syria) in the 6th millennium B.C. (Fig. 19). By 7000 B.C. such groups (known in archaeological jargon as Pre-pottery Neolithic B and PPNB-related sites) extended in an arc from south of the Dead Sea (Beidha) up into the Taurus mountains (Jayyun) and east to the Tigris (Maghzaliyah). The presence of a PPNB-related settlement at Maghz-

zaliyyah is particularly significant. Until this site was excavated in the late 1970s, many (though not all) scholars thought that the initial settlement of the northern Mesopotamian plain was accomplished by people moving down out of the Zagros mountains to the east. In the Zagros a second tradition of farming and herding, utilizing highland plants and animals, was developed in the centuries after 6000 B.C. at sites such as Ganj Dareh and Tepe Guran (Smith 1971). Maghzaliyyah with its ties to the PPNB tradition of the western lowlands shows that the process of agricultural coloniza-

tion was initially restricted to zones that provided conditions similar to those of the areas in which each of these two major traditions origi-

nated.

Map of the Middle East showing the location of early Neolithic sites.
Messages from Bits of Stone

Within each of the major categories of chipped stone tools found at Griftile (e.g., "projectile point," "borer"), there is a considerable variety of form. Some of this variation is undoubtedly related to the specific function for which a tool is used; for example, a scraper used for working wood will be heavier and will have sharper edges than one used to remove flesh and/or hair from animal hides being made into leather. Such differences will even- 
tually be defined through a more
detailed study of the characteristics of artifacts within each major cate-
gory and through a study of wear
trades on the tools which can be
linked to specific activities.

In other cases, tools apparently used for the same purpose differ in minor ways; for example, a group of six complete tangential projectile points found inside Building 2 vary in tang size and shape, and in the proportions of the body of the point. This kind of "strophic" variation may reflect individual or group prefer-
ences in shape or technology. When
there is a consistent pattern in the
distribution of specific stylistic vari-
able parts within a single period of time they can be used to define groups that share a common tradi-
tion or technology. (For example, households or multi-household units within a village, groups of vil-
lages within geographical regions.)

A consistent pattern in the variation of stylistic attributes through time is one of the building blocks used to establish the contemporaneity of sites as well as within regions.

Because of the limited size of the excavated area at Griftile and the depth of the sequence, the major emphasis in any study of artifact variation will necessarily fall on change through time. At this pre-
liminary stage of our analysis only a few tentative comments can be
made on the nature and meaning of ob-
served changes, but these do sug-
gest the direction of our research.
For example, there are significant
classes of burins and flakes re-

moved to resharpening burins (spalls), are very common in the up-
permost levels of the deposit, but
rare in earlier parts of the sequence (Fig. 175, y, z, a). Burins have been
linked through ethnographic ob-
vatation and experiment with the
manufacture of bone artifacts such as
needles or awls, and such tools
together with bone heads were re-
covered from the site (Fig. 21). If the number of burins is indeed a
direct reflection of changes in the
activities conducted at the site (rather than a reflection of the lim-
ited area excavated and changes in the
slides within the settlement in which
burins were used), it should be
possible to confirm this relation-
ship through a study of the fre-
frequency of other types of debris as-
sociated with bone working, for ex-
ample, pieces of cut bone and bone
splinters.

If we compare the chipped stone industry with that from other sites, the potential of the Grifthile se-
quency as a source of information on
relationships between regions be-
comes apparent. There are strong similarities between the chipped stone industry at Griftile and that at sites lying along the Euphrates River to the south (Murefteh, Abu Hureyra), in the Syrian desert (El Kon), and in the Levant. Sites in the latter region belong to a well-
known tradition originally defined at Jericho, and known as Pan-
pottery Neolithic B or PPNB (Mellart
1975, Redman 1978). To the north
west of Griftile, sites such as Safa, Qaujish, and Maqabadiyah show some similarities to the PPNB
chipped stone traditions, but also
have distinctive characteristics in-
cluding a heavy reliance on ob-
sidian, and a highly diagnostic tool
type made from a thick obsidian
blade that has been steeply re-
touched along both edges and has
striations along the long axis away
from the edges (Fig. 175). These
tools occur at Griftile in the lower
half of the deposit. Thus during the initial phases of the settlement its
primary ties were with groups liv-
ing in a similar steppe environment to
the south, but it was also in contact with groups in the mountains who
controlled access to resources such
as obsidian. During the later phases
of the settlement, when sites such
as Cayton had apparently been
abandoned, similarities in archite-
crue as well as chipped stone indus-
tries suggest that Griftile was most
closely related to villages within
northern Syria and Mesopotamia, in-
cluding Ras Shamra, Abu Hureyra,
and Bouqras.
of carnelian which occurs in the mountains of Iran.

An interest in blue and red minerals apparently led to experimentation with metal ores at Gri tille as well as at other early Neolithic sites such as Çayıntı where copper artifacts were found. In several of the burnt cobble pits from the latest levels at Gri tille, were found yellow or red lumps that have been identified as pieces of iron ore by Professor Robert Maddin of Harvard University. According to Maddin, not only were some of these pieces heated, but one shows evidence of deliberate working by people. The experiments with iron at Gri tille were apparently a dead end; however, they provide direct evidence of an attitude toward the environment which is characteristic of these Neolithic people, whose experiments with plants and animals had resulted in an agricultural way of life within a few favorable zones, and allowed them to colonize new areas, including the Euphrates valley.

This evidence for continuing technological innovation challenges the old idea that the early villages were stable and even stagnant communities which did not change significantly over millennia. New archaeological evidence from sites dated between 7000 and 5000 B.C. indicates that during this period there were major developments within the economic and social organization of Neolithic settlements as well as in technology and architecture. We now know that the early villages must have been lively places, built and maintained by people who were innovators and explorers. Unfortunately, we will never be able to learn more about early Gri tille. Within ten years the top of the site will be under an estimated 120 meters of water.

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Acknowledgements

The Gri tille Project was sponsored by Bryn Mawr College, with the cooperation of the University of North Carolina and participation by The University Museum. It was funded through generous grants from the National Endowment for the Humanities (Grants RO-0022-81-1315 and RO-20394-82), the Metropolitan Museum of Art, the James F. Hanes Endowment for North Carolina, The University Museum, and private donors. The Gri tille Project is directed by Richard S. Ellis; Marie-Henriette Carre Gates served as field director for the 1983 and 1984 seasons. Members of the staff who have worked on the Neolithic settlement are: Richard Davis, Richard Ellis, Christine Edick, Julia Frame, Marie-Henriette Gates, Janet Jones, Augusta Mcken, Dale Mayo, Carole O’Leary, Patricia Wattenmaker, and Andrew Weiss, excavators; Christine Edick, analysis of small finds; Richard Davis, Linda Kurtz, Sara Orel, Kathleen Vulec, and Tineke Van Zuiden, analysis and coding of chipped stone; Julie Perlmutter, drawing of chipped stone; Nikki Clark, Katherine Gleason, and Susan Trammel, drawing of small finds; Richard Ellis, Patrick Thomas, Andrew Weiss, and the author, photography; Gil Stein, faunal analysis; and Pamela Crabtree, floral analysis. The author was general supervisor of the Neolithic excavations.

Mary Mathilda Voigt is a Research Specialist in the Near Eastern Section of the University Museum, with responsibility for the publication of research conducted in Iran by the Hasshu Project. She received her Ph.D. in Anthropology from the University of Pennsylvania in 1975. She has taught at Vanderbilt University and Bryn Mawr College, as well as at the University of Pennsylvania. She has excavated at Dinkha, Hasshu, and Haji Firuz Tepe in Iran, and at Karataš and Gri tille in Turkey. Her research interests have been focused on the economic and social organization of farming communities in the Near East, and methods of reconstructing ideology from material remains.