

Uruk – City of Gilgamesh (Iraq) First tests in 2001 for magnetic prospecting

Uruk – the biblical Erech – still remains one of the most famous sites in Mesopotamia. Even when Babylon became the capital of Akkad and Sumer Uruk was always the main religious and cultural centre of ancient Mesopotamia. The dawn of civilisation is connected with the name of Uruk – the development of urbanism and the beginning of writing and literature in the 3rd millennium. Gilgamesh, hero, half man half God, was King of Uruk. In the Epic of Gilgamesh a lot of information about the ancient city and ancient life in Mesopotamia can be found.

“The Epic of Gigamesh was surrendered in several versions. All but a few of the Akkadian texts come from the library of Ashurbanipal at Niniveh (near Mosul in Northern Iraq). Unlike the Creation Epic, however, the Gilgamesh Epic is known also from versions which antedate the first millennium B.C. From the middle of the second millennium fragments of an Akkadian recension current in the Hittite Empire have come down, and the same Bogarköy archives have also yielded important fragments of a Hittite translation as well as a fragment of a Hurrian rendering of the epic. From the first half of the second millennium we possess representative portions of the Old Babylonian version (Tablets I-III, and X.). Certainly this version was a copy of an earlier text, possibly from the turn of the second millennium, if not slightly earlier” (Prichard 1958). In this early text we find one of the keys for the magnetic prospecting of the city wall of Uruk:

(...)

*He [Gilgamesh] brought report of before the Flood,
Achieved a long journey, weary and [w]orn.
All his toil he engraved on a stone stela.*

***Of ramparted Uruk the wall he built,
Of hallowed Eanna (temple of Anu and Ishtar in Uruk),
the pure sanctuary.***

*Behold its outer wall, whose cornice is like copper,
Peer at the inner wall, which non can equal!*

Seize upon the threshold, which is from the old!

Draw near to Eanna, the dwelling of Ishtar,

Which no future king, no man, can equal.

Go up and walk on the walls of Uruk,

Inspect the base terrace, examine the brickwork:

Is not its brickwork of burnt brick?

Did not the Seven [Sages] lay its foundations?

(...)

(Remainder of the column lost)



The important point for magnetometry – some 5.000 years later – is the fact that Gilgamesh used baked (burnt) bricks for the city wall he built. We assume that the early city wall of Uruk had a mantle of baked bricks, filled with cheaper mud bricks, which would give an ideal base for magnetic prospecting, because of the high susceptibility and remanent magnetisation of burnt clay. Therefore we tried to prospect the city wall in an area where the wall still shows on the surface, and we planned to locate one of the city gates, which are also almost unknown.

Fig. 1. Uruk-Warka. Aerial photo (detail) of test area I (with the canal), taken by the Royal Air Force in 1935, courtesy of the German Archaeological Institute, Oriental Department.

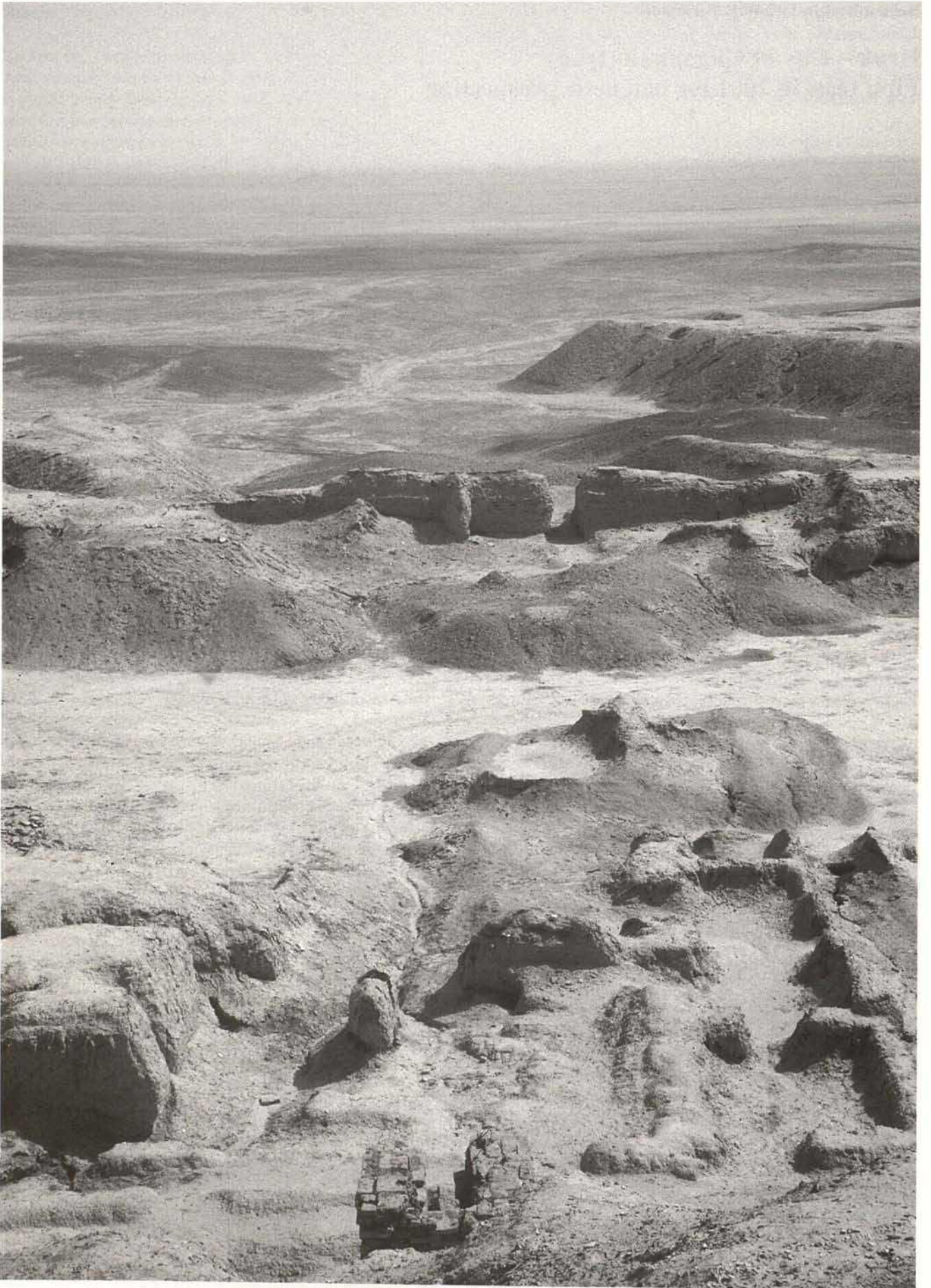


Fig. 2. Uruk-Warka. View of the central temple area with the Eanna Ziggurat (high temple). Photo by Margarete van Ess, German Archaeological Institute, Oriental Department.

Again from the Epic of Gilgamesh, as well as from many iconographic illustrations we have descriptions of rituals using a bark on a canal, e.g. from Uruk on a cylinder seal from the beginning of the 3rd millennium a ritual scene is shown with a boat on a canal and a shrine and altar mounted on the back of a bull. Like in other cities of ancient Mesopotamia, a sanctuary of a special type was situated in Uruk, outside the walls of the city, but belonging to it, called the New Year's Chapel (*bait akitu*). Once a year (on New Year's Day, when the king was allowed to enter the inner temple area) the image of the principal deity of the settlement (in Uruk it was Ishtar) was carried to the sanctuary in a procession, accompanied by throngs of worshipers. In certain instances, a sacred road through a special gate linked the outlining sanctuary to the temple (Oppenheim 1964). For Uruk we have the description of Gilgamesh leaving the city on a bark for a ritual course. This means that we should expect a canal or even a system of canals in the city. This question led to controversial discussions among archaeologists. Recently with the help of a series of aerial photos taken by the Royal Air Force in 1935 Margarete van Ess identified structures in the city of Uruk as canals.

Based on these questions of how to understand the Epic of Gilgamesh from an archaeological point of view, the first Iraqi-German joint archaeological project after the Gulf War was started in February 2001. Before the planned excavation missions to this very famous place high-tech geophysical prospecting was applied in an eight-day field campaign, a co-operation of the German Archaeological Institute (Ricardo Eichmann, Margarete van Ess), the Iraqi Department for Archaeology (Zuhair Rajab joined the project as representative) and the Bavarian State Conservation Office (Helmut Becker, Jörg Faßbinder). These tests of magnetic prospecting were meant to answer the question if this method would be suitable even for a multi-layered mound consisting mainly of debris from sun-dried mud brick – the old problem of prospecting archaeological structures made of mud in a surrounding of mud. Experience from other sites in oriental countries had shown that only magnetic prospecting had been the right method.

But how to reach a place in Southern Iraq in 2001? Travelling to Iraq 10 years after the Gulf War is still not easy with the embargoes still being valid. We flew to Amman (Jordan) and then had a long journey by taxi to Baghdad. We are indebted to the custom authorities for letting us pass with our equipment almost without severe problems. During the night of our arrival in Baghdad British and American forces bombarded a factory in the southern area of the city. After a first alarm and some heavy explosions we knew that we were in Baghdad. We very much admired the behaviour and calmness of the Iraqi people – nobody being unfriendly to foreigners although the situation of the people is very bad and almost unbearable. Even in the south at Uruk-Warka, which is not too far from Samawah we heard explosions, but life in the German expedition house in the ruins of Uruk was without any stress – almost like paradise, disturbed only by our generator for running the computers and recharging the batteries for the magnetometers.

Uruk has always been closed for any cross-country traffic, so there is actually only one track used by cars to reach the tiny camp village of Warka with the expedition house and some huts inhabited by the guard and his numerous family. The rest of the tribe was en route to Saudi Arabia with hundreds of camels. Another track follows the fence around and outside the ruins. The Arabs avoid the ruins because they are afraid of ghosts which are

supposed to haunt this place. All this results in a unique situation for archaeology, because many archaeological structures can already be traced on the untouched surface. Weathering and numerous changes of rain and wind over many thousands of years have modelled the material on the surface according to their density, showing many different structures of colour and relief. Robbery is a fairly small problem, being concentrated on the Kassite necropolis south of the city wall. The closed and untouched surface also has ideal conditions for magnetic prospecting – a completely different situation from the other sites of Mesopotamia. For instance, Babylon with its badly disturbed surface would cause far more problems for magnetic prospecting. In Uruk after about 70 years of archaeological excavation, during which lorries on railways were used for transportation of the debris, which was piled up to enormous heaps around the central area, only the central temples or palace areas are blocked for ever for magnetic prospecting. The climate in the second half of February with its moderate temperatures was quite ideal for such an expedition. We were also lucky only to have experienced one sand storm, which made work outside the house almost impossible. Also the soft surface of the ruins of Uruk with many layers of very fine ashes made walking rather difficult and exhausting.

Fig. 3. Uruk-Warka. Aerial photo (detail) of test area II taken by the Royal Air Force in 1935, courtesy of the German Archaeological Institute, Oriental Department. Open trench of the city wall, excavated in the 1935 campaign, in the south the ruins of the New Year's Chapel (*bait akitu*).



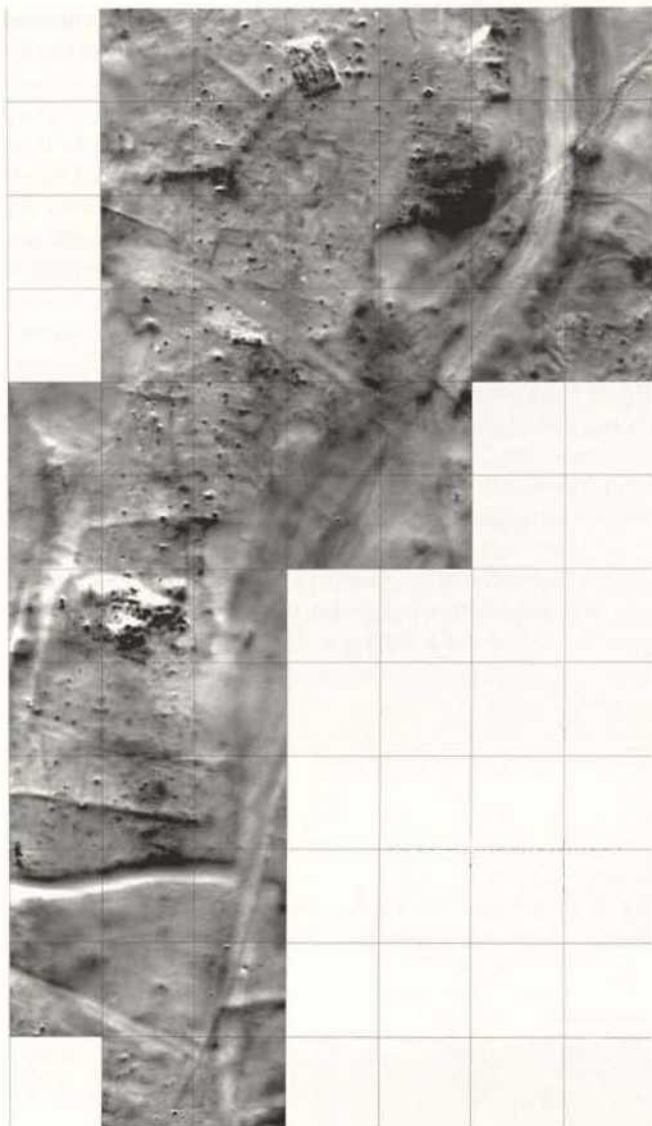


Fig. 4. Uruk-Warka 2001, test area I (West). Magnetogram in grey shading of the area covering the larger part of the aerial photo in fig. 1, which shows the main and secondary canals, the street system, the city structure with some very clear houses, severe damage to a city quarter by a flood (on the western side of the main canal). Caesium magnetometry, Scintrex SMARTMAG SM4G-Special with duo-sensor-configuration, sensitivity 0.01 nT (10 Pico-Tesla), dynamics ± 15.00 nT in 256 greyscale (white/black), raster 0.1/0.5 m interpolated to 0.25/0.25 m, 40 m-grid, magnetic prospection by Helmut Becker and Jörg Faßbinder, Bavarian State Conservation Office.

Caesium magnetometry was applied with Scintrex SMARTMAG-SM4G-Special in the so-called duo-sensor configuration. Two test areas were chosen for prospecting the canals in the city, the city wall and its gates. We laid out a 40 m grid orientated to magnetic North, which was fixed to the main topographical system of Uruk at the end of the campaign, and started in an area (area I West) inside the city wall with old layers and some traces of buildings visible on the surface (52 grids of 40 x 40 m = 8.5 hectares). The second area II (South) was measured for prospecting the city wall of Uruk (42 grids of 40 x 40 m = nearly 7 hectares). This area was chosen for covering a part of the city wall since there a depression in the wall could possibly mark a city gate. In parts of this area the wall was still about some 4 or 5 m high, but flattened to some decimetres in the eastern direction. Outside the wall in a distance of about 200 m a huge building made of baked bricks with the stamp of King Nebuchadnezzar II (604-562 B.C.) was already visible on the surface. The building was supposed to be a temple or the southern New Year's Chapel (bait akitu) (see back-cover).

The results of magnetic prospecting in the two test areas are fantastic (see magnetograms in figs. 4 and 5). Already the first evening we realised that we had traced the main canal as well as some house structures, including the very clear plan of an old Babylonian house built of baked bricks (fig. 4). The following days we found that the old city of Uruk had a complete canal system with a nearly 5 m-wide main canal and two or three secondary canals in the area to the west. Besides this canal system a street system existed at different levels. Another very interesting discovery in this area I West were vast ravages of the settlement patterns by a flood mainly on the western side of the canal.

In area II South the city wall gave a clear magnetic anomaly mainly caused by the mantle of burnt bricks on both sides as described in the Epic of Gilgamesh. The southern city gate shows a very wide opening of nearly 16 m. The gate was also mantled with baked bricks. These facts from the magnetogram help to imagine the splendid pictures of the Ishtar gate in Babylon. There is also strong evidence that this gate was actually used as a water gate for the passage of the main canal through the city wall.

In the area towards the so-called bait akitu building, a vast cemetery was identified in the magnetogram. Ceramics on the surface from numerous robbery pits in this area indicate that this was part of a large necropolis of the Kassite epoch.

Also the supposed New Year's Chapel (bait akitu) situated nearly 200 m south of the city gate, showed very clear magnetic anomalies due to the high magnetisation of the burnt bricks. The architectural details with three cellular structures on the western side of the building with a large court and a surrounding wall are very different from the known plans of temples. There is a direct canal from the gate in the city wall to a smaller gate (of burnt bricks) beyond the New Year's Chapel and a smaller canal leading to its western side and forming an elongated basin for boats to anchor. Everything seems to correspond exactly to the illustrations and descriptions of the New Year's ritual, except the fact, that we are dealing with the first millennium instead of the third. But there may be an older building underneath Nebuchadnezzar's chapel.

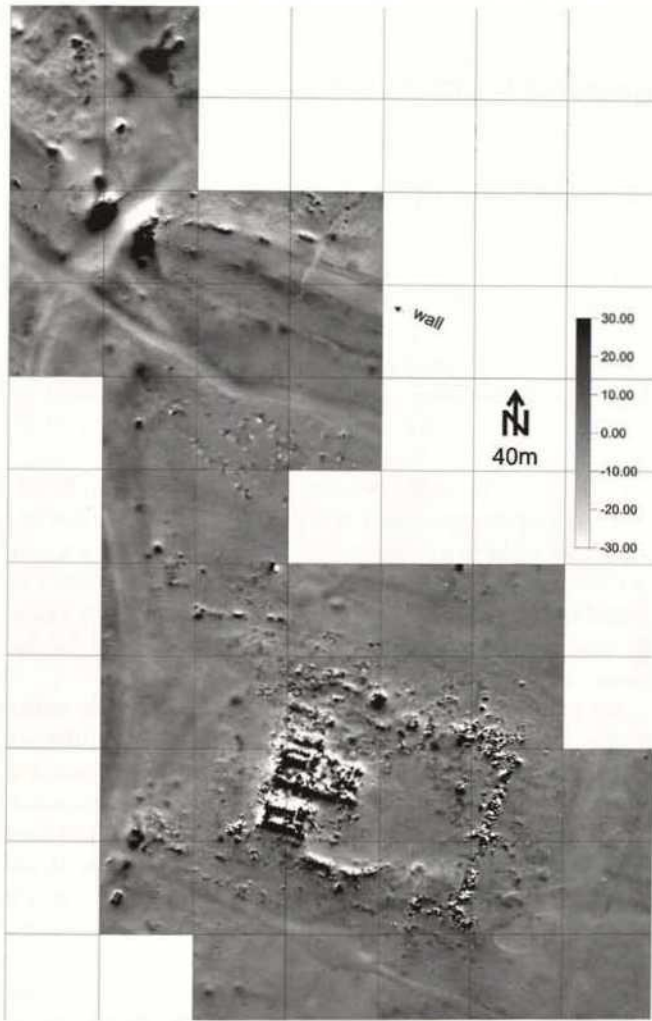


Fig. 5. Uruk-Warka 2001, test area II (South) showing the city wall, a complex gate (possibly a water gate for the main canal), a Kassite necropolis in the middle and the New Year's Chapel (bait akitu) in the south. The archaeological trench from 1935 in the city wall is still visible in the magnetic prospecting in 2001, same technical data as fig. 4 (see also fig. on the back cover).

References

- Prichard, J.B., 1958: "The Epic of Gilgamesh." In: *The Ancient Near East, An Anthology of Texts and Pictures*.
 Oppenheim, A.L., 1964: *Ancient Mesopotamia, Portrait of a Dead Civilization*.