

TERRESTRIAL CARTOGRAPHY
IN
ANCIENT MESOPOTAMIA

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*The eagle spoke unto him, to Etana, saying:
“Look my friend, how does the land appear?”*

— The Legend of Etana

Translated by J. V. Kinnier Wilson

ABSTRACT

Over one hundred and seventy maps and plans are preserved from the ancient Near East, drawn on clay tablets or inscribed in stone, though a full study of all the available cartographic material from Mesopotamia has never before been undertaken. This thesis offers a critical analysis of these maps and plans, with particular focus on their graphic conventions, typology and function in Near Eastern society. The text on many of these maps is also undeciphered and a number of examples are translated here for the first time, including an unpublished map of an irrigation network in the Schøyen Collection. By examining all this material in a single study, it becomes clear that there was a coherent documentary genre in Mesopotamia which was cartographic in nature, and which served a variety of administrative and planning purposes. The Near Eastern cartographic corpus is also contextualised within the wider history of cartography, so that its place in the global development of graphic mapping can be better understood.

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In memory of my father,

Paul Wheat

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68845 + 83002

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ABBREVIATIONS

ARM = Archiv Royales de Mari

AS = Anatolian Studies

BSA = Bulletin on Sumerian Agriculture

BSOR = Bulletin of the Schools of Oriental Research

CAD = Chicago Assyrian Dictionary

CT = Cuneiform Texts from Babylonian Tablets in the British Museum

EDANES = The Empirical Dimensions of Ancient Near Eastern Studies

ePSD = The Electronic Pennsylvania Sumerian Dictionary

JCS = Journal of Cuneiform Studies

JESHO = Journal of the Social and Economic History of the Orient

JNES = Journal of Near Eastern Studies

JSS = Journal of Semitic Studies

MDOG = Mitteilungen der Deutschen Orientgesellschaft zu Berlin

NABU = Nouvelles Assyriologiques Brèves et Utilitaires

OIP = Oriental Institute Publications

Or = Orientalia

OrAn = Oriens Antiquus

OrNs = Orientalia New Series

RA = Revue d'Assyriologie et d'Archéologie Orientale

RAcc = Rituels Accadiens

RHM = Revue d'Histoire des Mathématiques

RLA = Reallexicon der Assyriologie et d'Archéologie Orientale

RTC = Recueil des tablettes chaldéennes

SPAW = Sitzungsberichte der Preussischen Akademie der Wissenschaften: Philosophisch-Historische Klasse

VAB = Vorderasiatische Bibliothek

ZA = Zeitschrift für Assyriologie und Vorderasiatische Archäologie

CHRONOLOGY OF THE ANCIENT NEAR EAST

The Old Akkadian period — c. 2340-2200 BCE

The Ur III period — c. 2119-2000 BCE

The Old Babylonian period — c. 2000-1600 BCE

The Old Assyrian period — c. 2000-1350 BCE

The Middle Babylonian period — c. 1599-1000 BCE

The Middle Assyrian period — 1350-1050 BCE

The Late Babylonian period and Neo-Assyrian periods — c. 1000-600 BCE

The Neo-Babylonian period — c. 626-539 BCE

The Achaemenid period — c. 550-330 BCE

INTRODUCTION

This thesis investigates the maps and plans of the ancient Near East, of which there are around one hundred and seventy extant examples preserved in collections across the world. The finds discussed here are intended to represent as exhaustive a collection of cartographic pieces from the Near East as possible, though no doubt further maps and plans will come to light in the future through further excavation work in the Middle East. It can also be noted that though two prehistoric ‘maps’ are discussed in this thesis, the scope of this study is primarily historical, analysing cartographic finds from the Old Akkadian period to the Achaemenid era.

This study is also solely concerned with terrestrial cartography; though there are a number of astronomical maps from the ancient Near East, these have been previously collected and comprehensively studied by W. Horowitz in *Mesopotamian Cosmic Geography*,¹ and any in-depth analysis of such finds is therefore unnecessary in this thesis. A full explanation of the criteria by which Near Eastern ‘maps’ can be defined is found in chapter one, which also contains a survey of ancient terminology and literary evidence, a discussion of previous scholarship and the development of the history of cartography as a distinct academic discipline, evidence for ancient cartographers and the graphic and written conventions found on Near Eastern maps.

The remaining five chapters investigate the maps and plans of Mesopotamia according to a five point typology: field and agricultural estate plans are discussed in chapter two, maps of canals and irrigation networks are discussed in chapter three, chapter four contains an investigation of building plans and chapter five is concerned with city plans. Finally, chapter six contains an analysis of regional maps and perhaps the most well-known cartographic example from the ancient Near East, the Babylonian Map of the World. Within each of these chapters, finds are discussed in chronological order.

Though there are a number of articles concerned with individual maps and plans, in addition to studies dedicated to specific cartographic genres such as field plans, a complete study of the maps and plans of the ancient Near East has never before been undertaken. This study

¹ 1998, Winona Lake, IN

therefore not only focuses on the graphic and written conventions of the individual cartographic genres of the ancient Near East, but also examines trends and similarities found across all types of cartographic material from Mesopotamia, with the aim of discovering the functions of these maps and plans so that their purpose can be better understood in the wider context of the history and cultures of the ancient Near East.

CHAPTER ONE:

THE CONTEXT OF NEAR EASTERN CARTOGRAPHY

DEFINING ‘MAPS’

Establishing what is meant by the term ‘map’ is no simple task, since such definitions can vary enormously between different cultures and periods, and creating a critical framework in which such diverse material can be examined is therefore problematic. The definition used in this thesis is taken from that used in J. B. Harley and D. Woodward’s *History of Cartography* which, as they point out, is necessarily broad enough to encompass the diverse range of material assembled in their study:

“Maps are graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world.”²

There is no qualitative element to this definition; it does not, for example, suggest that maps must be mathematically accurate in the spatial arrangements they represent, nor does it limit itself in terms of a map’s potential function. It can be understood, for example, that maps frequently express political ideologies or religious concepts, often in conjunction with geographic or topographic information. Furthermore, this definition is not restricted to purely terrestrial maps, or maps of real places. Though this thesis does not discuss astronomical maps, the same definition can be applied to plans of the stars, or indeed to maps of ‘fictional’ places, such as the heavens or the underworld; in short, to any place, process or event which can be conceived or communicated through the medium of a map.

It is therefore not the subject matter by which maps are defined in this study, but rather graphic criteria. The materials and techniques used to compose Near Eastern maps are discussed in more detail below, but to expand on the definition given above, they are graphic

² Harley & Woodward 1987: xvi

representations of things, concepts, conditions, processes, or events in the human world, which are drawn on clay tablets or inscribed in stone. Furthermore they are all, with the exception of one example,³ drawn in aerial perspective. It is also noted here that the same definition as that given above is also applied to the word ‘plan’ in this study, and the terms ‘map’ and ‘plan’ are used interchangeably. While maps and plans are here defined as graphic representations, this study also contains a brief section on what can be termed ‘verbal mapping’, where geographic or topographic data is expressed through written means.⁴

PREVIOUS SCHOLARSHIP

The study of historical cartography developed as a distinct discipline in the latter half of the twentieth century, culminating in Harley and Woodward’s seminal six volume series *The History of Cartography*,⁵ which charts the global development of mapping from prehistoric periods to the modern era. Indeed, Harley’s work in the field became so influential that it prompted a re-evaluation of what can be considered a ‘map’, a concept previously based on a modern Western ‘standard’, with the result that many more images which were not traditionally considered ‘cartographic’ are now recognised as maps.⁶

While the study of historical cartography has developed as a distinct discipline, however, such general studies of maps tend to contain only minor sections on ancient Near Eastern cartography, and suffer from a lack of engagement by non-Assyriology specialists with the philological aspects of examples from Mesopotamia.⁷ Similarly, research into cartography by Near Eastern specialists has generally comprised scattered articles of varying quality on individual examples, with little attention paid to the new critical approaches employed by cartographic historians.

Nevertheless, there have been a number of previous articles on the history of cartography in the ancient Near East which, in light of the lack of previous research into these artefacts, tend to take a descriptive approach. E. Unger’s 1935 article ‘Ancient Babylonian Maps and

³ A vertical perspective ‘plan’ of a ziggurat, discussed below pp. 177-181

⁴ See below pp. 249-252

⁵ 1987 (Chicago)

⁶ Black 2000: 1

⁷ See for example Bagrow 1966: 31, Crone 1978: 1, Tooley 1978: 3 and Muhly 1978: 28-31

Plans⁸ provides the earliest survey of the available material, including reference to his work on Near Eastern orientation, which still stands today as one of the most significant investigations into the Babylonian cardinal points. While only a small section is dedicated to the maps of Mesopotamia, R. S. J. North's 1979 book *A History of Biblical Map-Making*, contains brief commentary on some of the most well-known cartographic examples from the ancient Near East, including the Gasur Map, the Nippur City Plan and the Babylonian Map of the World. North's study also anticipates a number of the criticisms related to previous scholarship which came to prominence in Harley and Woodward's *History of Cartography*, noting that studies in historical cartography tend towards "collector's items."⁹ While North is highly selective in his approach to the examples he discusses, W. Röllig's 1980 article 'Landkarten'¹⁰ provides a good general overview of all the available material, as does A. R. Millard's brief but comprehensive typological study 'Cartography in the Ancient Near East',¹¹ published in the first volume of the abovementioned *History of Cartography*.

Sections on cartography also appear in a number of general studies devoted to the languages and cultures of Mesopotamia, such as K. R. Nemet-Nejat's *Daily Life in Ancient Mesopotamia* (1998)¹² and G. Leick's *The Babylonians: An Introduction* (2002).¹³ In both of these cases, cartography is examined in conjunction with geography which, though convenient for the purposes of a general study, is problematic, since it will be shown in this thesis that graphic maps were rarely used as the principle medium through which geographic knowledge was recorded in the ancient Near East.

Similar approaches are found in articles dedicated to Near Eastern geography, such as H. F. Lutz's early study 'Geographical Studies Among Babylonians and Egyptians',¹⁴ D. O. Edzard's article 'The Ideas of Babylonian Geography'¹⁵ and a study on a geographical text by W. W. Hallo, 'The Road to Emar',¹⁶ which contains a brief discussion on Mesopotamian cartography. In these articles maps are discussed in the context of geography and geographical knowledge yet, to reiterate, since Near Eastern maps were not solely concerned with communicating geographic knowledge, they tend to be marginalised in these studies. In

⁸ *Antiquity* 9, 311-322

⁹ North 1979: 9

¹⁰ *RLA* 1980-1983: 464-467

¹¹ 1987: 107-116

¹² See pp. 93-97

¹³ See pp. 9-18

¹⁴ *AA* 26 (1924), 160-174

¹⁵ *Sumer* 41 (1985), 113-114

¹⁶ *JCS* 18 (1964), 57-88. See particularly pp. 57-62 for Near Eastern maps.

short, they are found to be inadequate as sources of geographic information, and are then relegated to the peripheries of cuneiform documentation as simply curiosities.

There have also been a number of individual studies on different categories of plans, such as K. R. Nemet-Nejat's book *Late Babylonian Field Plans in the British Museum* (1982). While Nemet-Nejat takes a primarily philological approach to this group of seventy field plan tablets in order to investigate their administrative function, she also includes a brief survey of different types of cartographic material from the ancient Near East, with some commentary on the graphic conventions of field plans. Mesopotamian building plans have received perhaps the most attention from Near Eastern scholars, with the first major study by E. Heinrich and U. Seidl in 'Grundrisszeichnungen aus dem Alten Orient',¹⁷ later followed by R. Dolce's 'Architectural Drawings on Clay Tablets'¹⁸ and A. Bagg's article 'Mesopotamische Bauzeichnungen'.¹⁹ A 1993 study on ancient building plans by J. Heisel,²⁰ an architectural historian rather than a Near Eastern specialist, contains particular focus on the graphic conventions of Near Eastern ground plans and their relationship with excavated buildings.

ANCIENT TERMINOLOGY AND TEXTUAL EVIDENCE

There are a number of Sumerian and Akkadian terms which can be roughly equated with the word 'map' as defined above, which are found in both administrative and literary texts. The Sumerian word *ĝeš-ĥur* which can be translated as 'plan' or 'design',²¹ for example, is used to describe a temple plan drawn on a lapis lazuli tablet which features in Gudea's 'Cylinder A' text. This document commemorates Gudea's rebuilding of the Eninnu Temple in Lagash, giving an account of the ruler's dream in which he is visited by the gods Ningirsu and Ninduba: *mìn-kam ur-saĝ-ĝá-àm, á mu-gur li-um-za-gìn šu im-mi-du₈*, "Furthermore, there was a warrior who bent (his) arm holding a lapis lazuli plate on which he was setting the ground-plan of a house."²² The term *ĝeš-ĥur* clearly describes a graphic plan of a building in this context, while the same word appears later in the hymn during the construction of the

¹⁷ MDOG 98 (1967), 24-45

¹⁸ AANE (2000), 365-384

¹⁹ EDANES (2011), 543-586

²⁰ *Antike Bauzeichnungen* (1993)

²¹ Cf. ePSD 'ĝeš-ĥur' (accessed 07/08/2012)

²² Gudea Cylinder A, V 2-4, translated by Edzard 1997: 68

temple: é-a ^den-ki-ke₄ ġeš-ħur-bi si mu-na-sá, “...while Enki straightened out for him the ground-plan of his house.”²³ It is unclear whether the ‘plan’ which is ‘straightened out’ by Enki is the same type of graphic representation found on the lapis lazuli tablet mentioned earlier in the text, or whether the term ġeš-ħur here refers more generally to the idea of the temple’s layout. Gudea’s association with graphic ground plans can also be seen in a diorite statue of the ruler, however, in which he is portrayed holding a tablet showing the ground plan of a temple on his lap, discussed in more detail below.²⁴

The lapis lazuli plan described in Gudea’s dream can be identified with the types of building plans drawn on clay tablets in the ancient Near East, and the theme of Cylinder A, the building of the Eninnu, strongly suggests that such plans were used as construction tools. The term ġeš-ħur also appears in a poem in praise of the ruler Šulgi, in which the king boasts of his proficiency in a number of fields: al ġiš ù-šub á-KU ġiš-ġá-ġá ġiš-ħur uš ki-tag, “Pickaxe and brick-mould, wages (?), use of instruments, planting of trees, tracing and layout of foundations...”²⁵ The term ġeš-ħur, translated by Castellino as ‘tracing’, can also be translated as ‘drawing a plan’, suggesting that Šulgi is proficient in both drawing building plans and implementing these in construction, where he lays foundations (ki).

The Akkadian term *gišħurru*, a loanword from the Sumerian word ġeš-ħur, also appears on a number of occasions in an inscription of the Assyrian King Esarhaddon (680-669), which commemorates his rebuilding of the Esagil Temple in Babylon. The king gives an account of his initial preparations and gathering of craftsmen and master builders, describing them as men who ‘lay out plans’ (*giš-hur-i iš-te-niš*).²⁶ Though it is conceivable that the type of ‘plan’ referred to here is a design drawn on a physical object such as a clay tablet, the same term is used in the later in the inscription to signify that the refurbished Esagil temple was built by Esarhaddon ‘in accordance with its earlier plan’ (*ki-i KA GIŠ.ĤUR-šú maħ-ri-ti*).²⁷ In the latter case, the term *gišħurru* may be used to indicate the general design of a building as established by the layout of its foundations rather than a drawing or design, and it is thus uncertain whether Esrahaddon in fact used a building plan of the type discussed in the fourth chapter of this thesis.

²³ Gudea Cylinder A, XVII 17, translated by Edzard 1997: 80

²⁴ See pp. 146-159

²⁵ Šulgi C, line 43, translated by Castellino 1972: 250-251. Though Castellino translates the term ġiš-ħur as ‘tracing’, the word could also be translated in this line as ‘drawing a plan’, suggesting that Šulgi is proficient in both

²⁶ Esarhaddon 104, iii: 37. Translated by Leichty 2011: 198

²⁷ Esarhaddon 104, iii: 45. Translated by Leichty 2011: 198

The Akkadian term *uṣurtu* can also be translated as a ‘drawing, plan, engraving, picture or relief’, though it encompasses a number of other meanings; it might also indicate the foundations of a building on the ground, or a divine plan or concept.²⁸ It is directly equated with the Sumerian term *geš-ḫur* in a lexical list,²⁹ however, and is found on an Old Babylonian building plan inscribed on its reverse with a brief caption identifying the drawing as: *uṣurti bīt Sippar-Jahrurum*, ‘Plan of a house in Sippar-Jahrurum’.³⁰

ANCIENT NEAR EASTERN CARTOGRAPHERS

There is no Sumerian or Akkadian term which identifies ancient scribes who specialised in drawing graphic maps, though there were professional ‘surveyors’ who were responsible for collecting field data, known as *šassukku*.³¹ It is uncertain whether the *šassukku* was responsible for recording survey data graphically, though the term appears in a lexical list which describes specialist scribes,³² and it seems likely that the surveyor’s role included drawing up land records, whether they were verbal or graphic. The term *abašlu*³³ can also be translated as ‘surveyor’, and in addition to agricultural land surveys, this official is also described as undertaking a planning role in the reconstruction of the Etemenanki ziggurat at Babylon, as described by Nabopolassar.³⁴

The term *abašlu* is a contraction of the words *abi ašli*, ‘father of the line’, a reference to the tools used by surveyors, the rod and rope, in the measuring of fields.³⁵ That surveying was part of scribal education in some periods is indicated by a document known as ‘Examenstext B’, part of a series of four texts which purport to describe the school curriculum of the first millennium, presented as a series of rhetorical questions. A line in Examenstext B asks if a pupil knows how to establish the borders of a field (*eq-la pa-la-ku*),³⁶ using the verb *palāku*,

²⁸ Cf. CAD U/W, *uṣurtu* A (p. 290)

²⁹ Emesal vocab. III 60

³⁰ See pp. 158-167

³¹ Cf. CAD Š/1, *šassukku* (p. 145)

³² Lú-ša I. 141 ff (Wiseman 1972: 146)

³³ Cf. CAD A/1, ‘*abi ašli*’ (p. 51)

³⁴ VAB IV, 62, ii.25.f (Wiseman 1972: 147 n. 39)

³⁵ Surveying methods are described in more detail in chapter two

³⁶ Line I. 27, translated by Sjöberg (1975: 144-145)

‘to draw boundaries, delimit, divide’, and when written in the D stem as is the case here, can be translated as ‘to draw multiple boundaries.’³⁷

While Examenstext B references the process of field surveying rather than recording field data graphically, at least three school tablets which bear graphic building plans³⁸ suggest that scribes were required to undertake cartographic training. As mentioned above, there is no Sumerian or Akkadian term which can be translated as ‘cartographer’, very likely because scribal roles were divided according to the tasks they undertook, such as making field surveys or designing buildings, rather than the means by which such information was recorded or planned, which may sometimes have been graphic. The drawing quality and technical skill of the maps discussed in this thesis varies enormously; many of the field plans, for example, are poorly executed and contain a number of mistakes, which suggests they were perhaps drawn on site, while the school exercise building plans show the hallmarks of the novice map-maker. A number of other maps, however, are extremely well-executed, with none of the mistakes one would usually expect when drawing on clay, and appear to have been composed by experienced scribes who were highly trained in the art of drawing on tablets.³⁹

TECHNICAL DRAWING AND CARTOGRAPHIC CONVENTION

It must be noted that clay is an exceptionally difficult material to draw on, and the level of technical skill found on many of the maps of the ancient Near East is testament to the proficiency of the scribes who drew them. Clay was the only readily available material in Mesopotamia, and the difficulties of writing on the soft material were overcome by the invention of the stylus, cut from stiff reeds, with a triangular end which produces the familiar ‘wedge-shapes’ of cuneiform writing.

While clay tablets are sufficient for the purposes of writing texts, however, they are not ideal for drawing maps. Firstly, the average tablet was generally no larger than 10 x 10 cm, and such a limited surface area inhibited the size of the drawings made by scribes, with the result

³⁷ Cf. *CAD P, palāku* (A) (pp. 49-50)

³⁸ See chapter four, and especially pp. 150-154

³⁹ Note that the two building plan examples carved in stone, the Gudea Statue B plan (pp. 146-159) and the Stele of Nebuchadnezzar II (pp. 182-185) were probably inscribed by sculptors rather than scribes, though both examples show a sound knowledge of the principles used to compose Near Eastern building plans. A number of field plans are also carved on stone ‘kudurru’ monuments of the Middle Babylonian period, which generally commemorate royal land grants (pp. 63-68)

that Near Eastern plans were rarely drawn to scale, but rather drawn to fit the size of the tablet and then scaled with written measurements. The few examples of correctly scaled plans are drawn on exceptionally large tablets, such as the Nippur City Plan⁴⁰ inscribed on a fragmentary tablet of 21 x 18 cm, suggesting that the tablet was specifically made in order to accommodate the plan it depicts.

Furthermore, while many modern maps printed on paper distinguish between different types of features with the use of colour, pigments and inks were very rarely used on Mesopotamian tablets. A small number of inked tablets painted with reed pens are known from both Assyrian and Hittite collections,⁴¹ though such a practice does not appear to have existed in southern Mesopotamia, from which the majority of our maps are provenanced. Since colour could not be used to distinguish between features on Near Eastern maps, scribes adopted the use of graphic effects which could easily be achieved on clay. A number of maps, for example, denote rivers using the 'water-lining' technique, where pairs of parallel lines which indicate the banks of a river or canal are incised with wavy lines.⁴² It was equally common, however, for a scribe to add a written caption to identify the type of feature shown.

It appears that maps were composed using a variety of instruments, almost certainly including the same type of stylus used for writing, as indicated by the thickness of the lines and 'wedge-shaped' line endings found on many Near Eastern plans. The fineness of the lines found on some examples, however, suggests scribes occasionally used a fine-tipped implement to draw in the soft clay. It is unknown whether such an instrument was simply a writing stylus held at such an angle that only its very tip scored the tablet, or whether it was a reed cut to a finer point. While no styluses survive from the ancient Near East, they are at least known from a number of artistic depictions, such as an implement carved on the same Statue of Gudea which shows the ruler holding a building plan tablet in his lap.⁴³

One example in the Near Eastern cartographic corpus, known as the 'Babylonian Map of the World',⁴⁴ also appears to have been drawn using a pair of ancient compasses. In this example, the world is represented by a perfectly round continent encompassed by a circular band of ocean, and the scribe's use of a pair of compasses is suggested by an incised hole in the

⁴⁰ The Nippur City Plan is discussed in chapter five, pp. 196-206. A correctly scaled Late Babylonian temple plan is also found on an exceptionally large fragmentary tablet of 23 x 31 cm (see below pp. 172-175).

⁴¹ Driver 1976: 30

⁴² See particularly a number of examples in the Old Akkadian field plan collection in chapter two, and the Late Babylonian Tuba city plan (pp.207-211)

⁴³ See pp. 146-159

⁴⁴ See pp. 235-248

centre of the tablet, which appears to have been made with one end of the compasses (figs. 97 and 98 and plate X). Again, it is unknown how such an instrument might have been made, since no artefact resembling such an implement has yet been recovered from the ancient Near East, though it may have been as simple as a pair of sticks or styluses joined by a piece of string which was widened according to the size of the circle required.

A similar instrument appears to have been used to draw small diagrams which illustrate problems found in two mathematical texts.⁴⁵ On the first of these, a pair of circles is drawn on the obverse of a tablet, while a mathematical problem written on the reverse identifies this diagram as a new residential area surrounding the older central part of a city, asking for the circumference of both to be found using a given set of dimensions.⁴⁶ Another mathematical text also contains a problem illustrated with a circular city enclosed by a ditch and then a dike (fig. 1), and the reader is asked to find the circumference of the dike, the diameter of the city and the volume of the ditch.⁴⁷

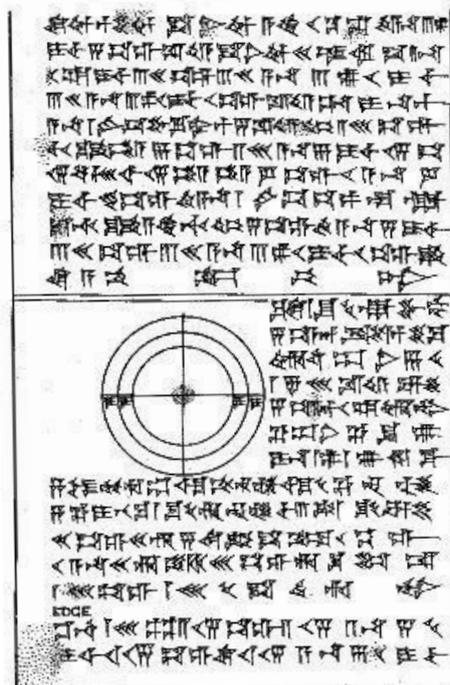


Fig. 1. Line drawing of part of a mathematical problem text illustrated with three concentric circles drawn with compasses

⁴⁵ Horowitz 1998: 42

⁴⁶ Böhl Collection 1821 (Nemet-Nejat 1993: 50)

⁴⁷ BM 85194 (Kilmer 1964: 144)

The illustrations found on these mathematical texts can also be compared with Near Eastern maps through their use of the ‘bird’s eye view’ or aerial perspective, since the cities and their surrounding defences in both examples are drawn as if seen from above. All the examples from the Near Eastern cartographic corpus, with the exception of one,⁴⁸ are also drawn in aerial perspective. A number of other graphic features common to many Mesopotamian maps and plans will also be discussed later in this thesis, though some brief observations on some of these conventions can be made here.

Building and city walls, for example, tend to be drawn with a pair of parallel lines, though single lines used to represent walls are found in some cases.⁴⁹ As mentioned above, rivers and canals are also drawn with pairs of parallel lines which represent their banks, and are either differentiated from city walls with the use of the water-lining technique, or identified with a written label. Near Eastern maps and plans rely heavily on the use of written labels, in fact, to identify a number of features such as the type of crop grown in a field, the function of a room in a building, the identity of a building in a city, or the presence of cities, roads or rivers in the wider landscape.

Written labels can also be included to indicate dimensions, through which plans are often scaled. Length and area measurements are included on a number of different map types, including field plans, building plans and city maps. The unit of measurement used is often omitted by the scribe, however, though it can sometimes be inferred from the dimensions provided. The mensuration systems of the Near East vary slightly across regions and periods, though all these systems are generally well-attested from mathematical texts. The terms used to identify smaller linear measurements appear to be based on body parts, such as the ‘*šusiuṭṭetu*’ (‘finger’, a measurement of 1.666 cm) or the ‘*kùš/ammatu*’ (‘forearm’, though generally referred to in secondary literature as a ‘cubit’, a measurement of 50 cm), while the largest linear measurement was conceived temporally, as a ‘double hour’ (*dana/bēru*). Area and volume measurements, meanwhile, are both expressed using the same terminology, and are therefore differentiated by context.⁵⁰

⁴⁸ A ‘plan’ of a ziggurat drawn in vertical perspective is discussed below (pp. 177-181), though it must be noted that it is not entirely certain whether this drawing should be categorised as a plan. A number of other examples, such as the plan on Gudea Statue B (pp. 172-175), may also show certain architectural features in vertical perspective, though in such cases the outline of the building is always drawn in aerial perspective.

⁴⁹ See chapter four.

⁵⁰ See appendix II for Near Eastern mensuration

A number of Near Eastern maps are also oriented, with the earliest examples dated to the Old Akkadian period (c. 2350-2150).⁵¹ Scribes oriented plans by writing captions on the relevant side of the drawing, using words prefixed with the sign ‘IM’ (tumu), ‘wind’:

IM-mir (<i>ištānu</i>)	‘storm wind’ (north) ⁵²
IM-kur (<i>šādu</i>)	‘mountain wind’ (east) ⁵³
IM-ulù (<i>šūtu</i>) ⁵⁴	‘demon wind’ (south) ⁵⁴
IM-mar-tu (<i>amurru</i>)	‘desert wind’ (west) ⁵⁵

Since each cardinal point was identified with a particular ‘wind’, in his early work on Near Eastern orientation Unger analysed meteorological data compiled in Iraq and spanning 150 years, identifying the four primary wind directions in this region as northwest, northeast, southwest and southeast.⁵⁶ He therefore suggested that the Mesopotamian system of orientation was inclined rather than perpendicular, and that the ancient cardinal points could be more accurately identified as IM-mir or si-sá, ‘northwest’, IM-kur ‘northeast’, IM-ulù ‘southeast’ and IM-mar-tu ‘southwest’:

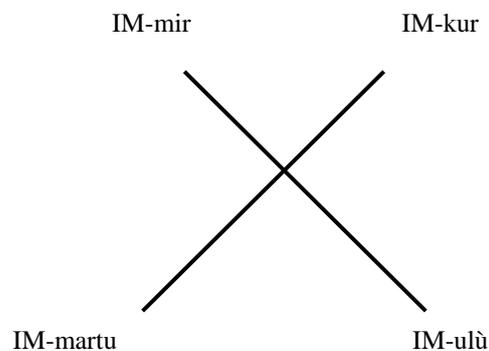


Fig. 2. The inclined system of orientation used in Mesopotamia

⁵¹ See the Old Akkadian field plans, chapter two, and the Old Akkadian Gasur map (pp. 223-229).

⁵² ePSD ‘IM-mir’ accessed 24/06/2012. Note that the term ‘si-sá’ is also used for ‘north’, though this generally appears in textual documents and the word ‘mir’ is used consistently for ‘north’ on Near Eastern plans.

⁵³ ePSD ‘IM-kur’ accessed 24/06/2012

⁵⁴ ePSD ‘IM-ulù’ accessed 24/06/2012

⁵⁵ ePSD ‘IM-mar-tu’ accessed 24/06/2012

⁵⁶ Unger 1935: 319

Since wind direction would not be consistent, however, a more reliable system would be to observe over time the constellations which appeared in a particular wind direction, and then use these as an orientation guide.⁵⁷ That such a system was used is suggested by an astronomical text known as *Mul-Apin*,⁵⁸ which states that wind direction can be found using constellations:

šum-ma mu-še-e šāri^{meš} ana amāri(igi.lá)-ka^{mul} mar.gíd-da ina
tīb(zi) IM:iltāni(si.sá) parkat(gib)^{át}
^{mul}ku₆ ina tīb IM:šūti(ùlu)^{lu} parik^{mul} gír.tab ina tīb IM:amurri(mar.dú)
parkat^{át}
^{mul}šu.gi u mul.mul ina tīb IM:šadī(kur.ra) izzazzū^{meš.zu}
ina u₄-me maššarti(en.nun)-ka šāra šá illaku^{ku} kakkabānu^{meš}
ú-kal-lamu-ka

“In order for you to observe the departure of the winds: Ursa Major lies

across the rising of the north wind,

Piscis Austrinus lies across the rising of the south wind, Scorpio lies

across the rising of the west wind,

Perseus and the Pleiades stand at the rising of the east wind,

On the day of you observation, the stars will tell you which wind is

blowing.”⁵⁹

⁵⁷ Unger 1935: 321

⁵⁸ There are two texts in the *Mul-Apin* series, with a possible third indicated by the colophon found on *Mul-Apin* II. The date of the series is unclear, since both documents appear to be compilations of texts from different periods. Horowitz (1998: 168) places this compilation between 1000 and 687 (the latter date according to the colophon found on one exemplar).

⁵⁹ *Mul-Apin* II, i 68-71, translated by Horowitz 1998: 198-199

Though compass directions are included on a number of Near Eastern maps and plans, it is not always possible to determine their orientation according to magnetic, since the area shown on the ancient map cannot always be identified in the modern landscape. In the handful of examples where the modern location of the area is known, however, as in the case of the Gasur Map,⁶⁰ a comparison between the ancient and modern orientation of the area depicted confirms that the Near Eastern system of orientation was inclined rather than perpendicular.

PREHISTORIC ‘CARTOGRAPHY’ IN THE ANCIENT NEAR EAST

The development of graphic mapping in prehistoric societies has long drawn the attention of anthropologists and cognitive archaeologists, where the use of symbols to depict the surrounding landscape has been described as a ‘documented advance in intelligent behaviour’,⁶¹ since the concept of mapping is not inherent to humans and is therefore acquired to serve a particular purpose. Indeed, the adoption of a system of symbols, rather than a purely ‘representational’ approach, used to communicate some aspect of one’s environment has been compared with the importance of developing a system of writing.⁶²

Though a comprehensive investigation into prehistoric drawings which can be considered ‘maps’ is beyond the largely historic scope of this thesis, two prehistoric examples will be discussed here, both of which have been previously identified as ‘maps’ in general studies on prehistoric cartography.⁶³ The first of these prehistoric maps is one of the most famous examples from the ancient Near East, the so-called ‘Çatal Hüyük Wall Mural’, named after the Neolithic site in modern Turkey at which it was discovered. The painting is located on the wall of a room described by the principle excavator Mellaart as a ‘shrine’, as suggested by the presence of votive figures, human skulls and wall paintings.⁶⁴

The mural appears to show a number of terraced rectangular houses drawn in aerial perspective, beneath a twin-peaked mountain (fig. 3) identified by Mellaart as Hasan Dağ, the

⁶⁰ See pp. 223-229

⁶¹ Renfrew 1982: 18

⁶² Renfrew 1982: 18

⁶³ See, for example, Delano-Smith ‘Prehistoric Maps and the History of Cartography’ in *The History of Cartography* (1987: 45-49)

⁶⁴ Mellaart 1967: 78, 176. This room was assigned the number ‘Shrine 14’ by Mellaart, located in Level VII, with finds radiocarbon dated to after 6200 BCE.

only double-volcano in central Anatolia which would have been visible from Çatal Hüyük during this period.⁶⁵ A comparison between the depiction of the houses on the mural and the ground plans made at the site is striking, and Mellaart's identification of the painting as perhaps the earliest map in the world is in many ways convincing.



Fig. 3. The Çatal Hüyük 'map'

A recently published article by S. Meece⁶⁶ throws doubt on Mellaart's interpretation of the mural as a map, however, identifying the painting as a representation of a leopard skin with a geometric pattern beneath. This is particularly likely in the wider context of the site, which contains a number of representations of animal skins and geometric patterns. Meece offers a number of other objections to Mellaart's assertions, however, which reveal that the history of the map's interpretation is not as simple as that presented by Mellaart in his most complete study on the site.⁶⁷ He too, in fact, originally identified the painting as a leopard skin in an early report on the find,⁶⁸ though he later changed his interpretation to the map version which became 'canonical'. There is also the issue of the orientation of Mellaart's Hasan Dağ photograph which was included in his 1967 report, since this photograph was not taken from Çatal Hüyük, yet is presented as matching the 'volcano' in the mural when viewed from the same site.⁶⁹ The identification of the Çatal Hüyük wall mural as a map therefore requires re-evaluation and, in the context of the site, Meece's leopard skin suggestion may prove the more reasonable interpretation of the painting.

⁶⁵ Mellaart 1967: 177

⁶⁶ S. Meece. 2006. 'A bird's eye view – of a leopard's spots.' *AS* 56, 1-16

⁶⁷ Meece 2006: 3

⁶⁸ Mellaart, J. 1964 'Earliest of Neolithic Cities: delving deep into the Neolithic religion of Anatolian Chatal Huyuk. Part 2 – Shrines of the Vultures and the veiled goddess.' *Illustrated London News*, 194-197

⁶⁹ Meece 2006: 12

The second prehistoric ‘map’ discussed here can be much more safely identified as the representation of a landscape, though whether it can be categorised as a map is a much more difficult question (fig. 4). The landscape is painted on a vase from the small site of Tepe Gawra in northern Mesopotamia, close to modern Mosul. The vase was discovered under the eastern wall of Room 206 in Level XII at the site, dated to c. 4200 BCE.⁷⁰ Large storage jars were often used as burial urns during this period, and the remains of an infant were found in this example. Many of the vases found at Tepe Gawra from this period are undecorated, though two thirds of the surface of this vase is covered with twelve ‘panels’ painted with red or brown pigment.⁷¹ Its highly decorated surface therefore makes it one of the more unusual examples from the site, and is no doubt why it was selected for such an important use.



Fig. 4. Photograph of the Tepe Gawra vase, with the second of its ‘landscape’ panels in the centre

Ten of the twelve painted panels on the vase are decorated with geometric patterns, while the remaining two contain landscape scenes. One of these landscape panels is badly damaged, though Tobler states that it is possible to see a pair of horned animals divided by a thick line, which he suggests is a river, running the length of the jar. A number of short, closely spaced

⁷⁰ Rothman 2002: 3

⁷¹ Tobler 1950: 150

lines connected to the central line are also interpreted by Tobler⁷² as wadis, the small seasonal streams found in this region. Unfortunately, the vase was originally housed in the collections of the National Museum of Iraq in Baghdad, and appears to have been lost or looted during the 2003 Iraq War. The only known photographs of the vase were published by Tobler in his 1950 report⁷³ on finds from the site, which does not include an image of the first landscape panel, described above.

We must therefore rely on Tobler's written description of the first landscape panel, though a photograph of the second undamaged panel is also included in his report (fig. 5). The scene shown on the second panel is enclosed on either side by a line of triangles which appear to represent mountains, while a river runs through a valley in the centre of the scene, this time represented by a meandering line, again with a series of short, closely spaced lines attached. On the left side of this river is a human figure holding some kind of implement, while on the opposite side a large horned animal is chased by a smaller creature with a curved tail. Tobler takes the smaller animal to be a dog, with the human figure on the left carrying a weapon, suggesting that the painting depicts a hunting scene.⁷⁴

⁷² Tobler 1950: 150

⁷³ Tobler, A. J. 1950. *Excavations at Tepe Gawra: Joint Expedition of the Baghdad School and the University Museum to Mesopotamia* Vol. II.

⁷⁴ Tobler 1950: 150



Fig. 5. Photograph showing a detail from the Tepe Gawra vase

What is of greatest significance to this study, however, are the small lines attached to the central river, and a new possible interpretation for the type of feature they represent is suggested here.⁷⁵ The regularity and dense spacing of these lines is unusual, since they are all of almost identical length and run the course of the entire river depicted on both landscape panels. Though Tobler interprets these lines as wadis, his suggestion is undermined by the difference in course between the rivers found on both panels. Specifically, he describes the river on the first panel as 'straight', while the waterway drawn on the second panel clearly follows a meandering course. Similarly, the mountains on the second panel are also presented as different heights. In this case, it seems unusual that the artist would present these geographic features as distinctly separate and unique, whilst drawing these streams in such a uniform manner.

It is therefore tentatively suggested here that these 'wadis' may in fact represent the elevation lines of the river banks drawn in aerial perspective, rather than streams. The scale of the landscape is unknown; these short lines might be intended to represent the sloping sides of a river bank, or the much steeper cliff sides of a valley with the river flowing along the floor below (see figs. 6 and 7 for an elevated view of the vase panel which might represent the

⁷⁵ Though see Wheat 2008: 16-18 (unpublished MPhil thesis)

intended effect). Furthermore, it seems likely that the human and animal figures were added to the scene after the natural features were painted, since they appear to be too large for the drawing. It is therefore possible that there are two sets of 'scale' found in this scene, one used for the geographic features which form its background, and another for the 'hunting' scene in the foreground.

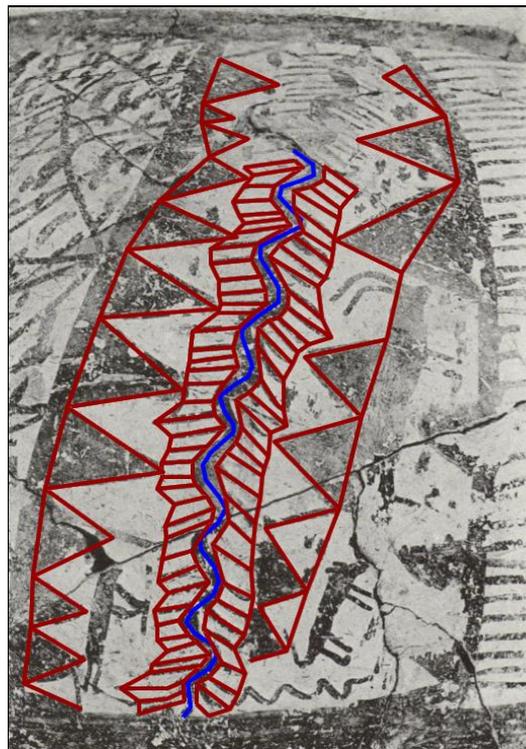


Fig. 6. The 'wadis' attached the river bank as elevation lines

Ultimately, the type of feature represented by these small lines must remain unknown. If they do represent elevation lines, however, the painting on the Tepe Gawra vase represents a sophisticated attempt to communicate the features of the natural landscape through the use of symbols, specifically the use of lines drawn to give the impression of sloping river banks when seen from above. Such an innovation can be counted as a significant step towards the practice of mapping, and the Tepe Gawra vase can thus be considered a true example of a prehistoric map.

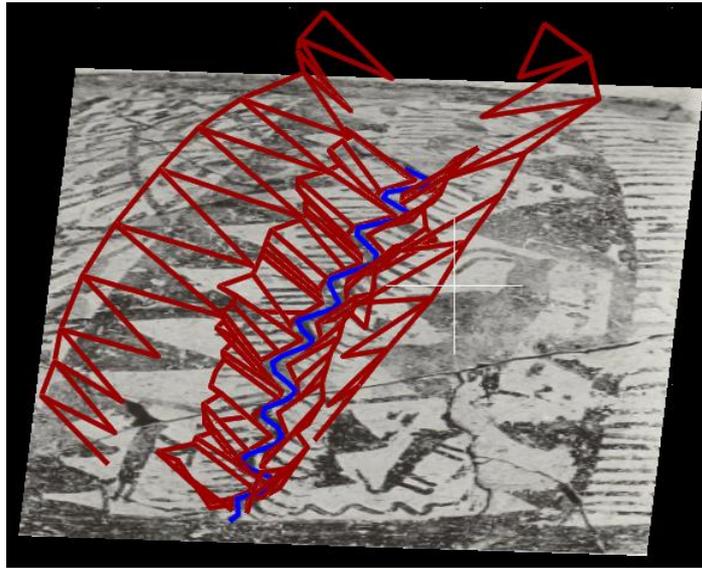


Fig. 7. An 'elevated' view of the features on the Tepe Gawra vase

CHAPTER TWO:

FIELD AND AGRICULTURAL ESTATE PLANS

INTRODUCTION

Field and agricultural estate plans are the most common type of cartographic material from the ancient Near East, and are attested throughout the history of Mesopotamia from the Old Akkadian to the Late Babylonian periods. In this study, field and estate plans are defined as graphic plans which show a plot or multiple plots of agricultural land containing quantitative information, such as border dimensions or the total area of the plot, or qualitative information, such as crop or soil type. Of the 170 maps and plans discussed in this thesis, 116 can be categorised as field plans, with sixteen fragments preserved from the Old Akkadian period, thirty from the Ur III period and seventy from the Late Babylonian era. Four field plans inscribed on stone boundary monuments, known as ‘kudurrus’, are also attested from the Middle Babylonian period.

They are also one of the most thoroughly studied types of cartographic material from the ancient Near East, with numerous studies made of individual plans, in addition to a major study of the Late Babylonian corpus by K. R. Nemet-Nejat, in *Late Babylonian Field plans in the British Museum* (1982). The only field plans which have so far remained essentially unstudied are the earliest examples, a collection of sixteen Old Akkadian fragments which are analysed here as a group for the first time. Due to the depth of previous scholarship, individual analysis of the Ur III, Middle and Late Babylonian plans is unnecessary, though they are discussed here in the wider context of Near Eastern cartography, with particular focus on their shared conventions and relationship with other cartographic genres.

THE OLD AKKADIAN PERIOD

A group of sixteen fragments dated to the Old Akkadian period represent the earliest field plans from the ancient Near East, all of which were discovered at Girsu in southern Mesopotamia. The fragments were originally published by Thureau-Dangin⁷⁶ during the late nineteenth and early twentieth centuries, yet they have attracted little subsequent attention from Assyriologists, aside from brief references in a handful of general works and studies of other Near Eastern field plan collections.⁷⁷

According to Thureau-Dangin, the tablets were discovered during excavations at Girsu by de Sarzec at the end of the nineteenth century, though clandestine digging at the site was rife and it is unclear how the plans were discovered; in any case, nothing is known of their archaeological context.⁷⁸ The tablets were sent to the Louvre and the majority were published by Thureau-Dangin with only their accession numbers, and it seems that they have now been lost from the Museum's collections. Furthermore, since there are no photographs of the tablets still in existence, we must cautiously rely on Thureau-Dangin's autograph copies for their interpretation. The fragments collected here reveal much about early maps and plans from the ancient Near East, however, and display many of the conventions which later became the hallmarks of Mesopotamian cartography.

The most complete plan from the Old Akkadian collection shows a series of three rectangular fields divided by single line borders (fig. 8).⁷⁹ Only the large central field is completely preserved, as suggested by the bordering lines visible at its edges, with most of the captions inscribed around the perimeters easily readable. The remaining two fields appear on the damaged lower side of the fragment, and contain captions which are only partially preserved.

⁷⁶ The plans were originally published in RA IV (1898) and RTC (1903).

⁷⁷ They are mentioned by Röllig in his article 'Landkarten', (*RLA* 1980) for example, with particular reference to AOT b 368.

⁷⁸ Thureau-Dangin 1897: 69. Note that a number of contemporary building plans also feature in the collection from Girsu published by Thureau-Dangin (see chapter four), making it one of the most prolific sites for cartographic material in the ancient Near East.

⁷⁹ Louvre AOT b362; clay; dimensions unknown. Provenance: Girsu; findspot unknown.

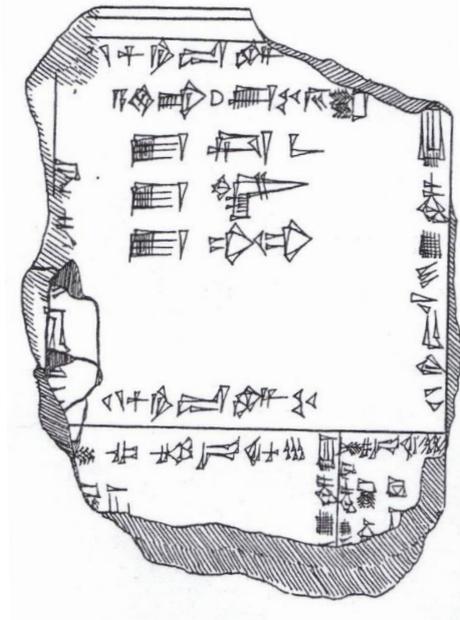


Fig. 8. Line drawing of an oriented Old Akkadian field plan fragment

The inscription on the central field notes the area of the plot with the length of its borders and their orientation, in addition to three labels indicating the presence of buildings, which are not indicated graphically on the plan.

Central field:

1' [2] maš nindan-DU im [mar-tu]	[2] ½ nindan (=15 m) [west]
2' a ša ₃ bi 1 iku 3 lál sar	its area is 1 iku (= 3600 m ²) 3 minus sar
3' e ₂ uš.bar	House of the Weaver
4' e ₂ anše	House of the Donkey
5' e ₂ gud du ₇	House of the Suitable Oxen
6' 2 maš nindan-DU im kur	2 ½ nindan (=15 m) east

Left hand side of central field:

Another plan fragment shows an area bisected by a curved double line (fig. 9),⁸¹ though it is unclear what these double lines represent since the caption inscribed between them is only partially preserved, providing a series of incomplete length measurements: [...] NI KU 5 nindan-DU [...] ku 2 nindan-DU NI [...], ‘5 nindan (= 30m) [...] 2 nindan (= 12m)...’ It would be logical to assume that these lines represent an irrigation canal, possibly identified by a label no longer preserved on the fragment, since parallel lines are generally used to represent either waterways or walls on Near Eastern plans. The representation of this channel is unusual, however, since halfway along its length it is joined to a short pair of parallel lines arranged at a 90° angle. These lines form a bridge to a single curved line which follows the same arc as the lower channel. Since the plan is so fragmentary, however, it is impossible to assess the relationship between this channel, its adjacent lines and the rest of the map.

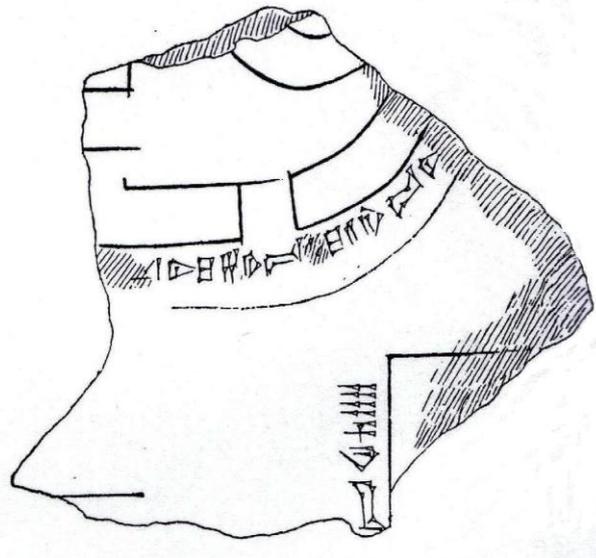


Fig. 9. A fragment of a field plan, possibly with canal

It must be noted however that if the double lines on this fragment do represent a canal inscribed with measurements, this plan represents only one of two in the entire corpus of Near Eastern plans on which the dimensions of a waterway are noted.⁸² A partial line of text is also preserved on the lower part of the fragment: 9 maš nindan-DU [...], ‘9 ½ nindan (= 57

⁸¹ Louvre AOT b360; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

⁸² Another example of a plan showing an irrigation system with canal dimensions is the Schøyen Canal map, discussed below pp. 81-95

m)...’ The writing here is oriented towards the left side of a pair of straight lines which form a right angle on the lower corner of the fragment, perhaps indicating that this measurement refers to the length of the border represented here by the perpendicular line.

Another fragment shows a field or estate encompassed by a circle, within the context of a series of larger fields (fig. 10).⁸³ The arrangement of what appear to be separate parcels of land here is unusual; in addition to the circular estate on the upper half of the fragment, the plan is further divided into three sections by curved border lines. The first of these at the top contains the circular area inscribed with the caption 7 sar 10 gín ($252 \text{ m}^2 + 6 \text{ m}^2 = 258 \text{ m}^2$).

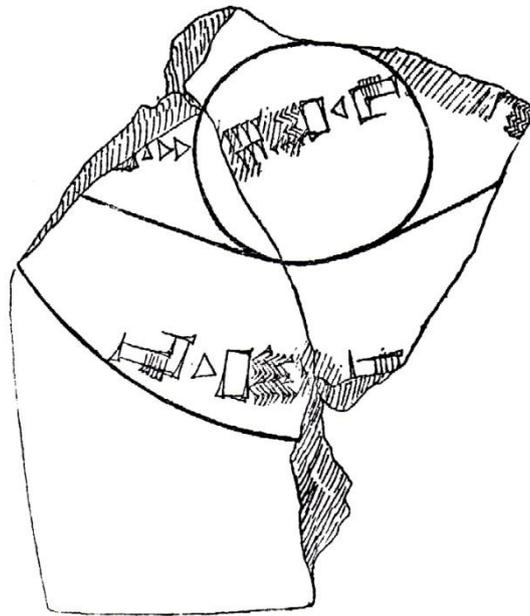


Fig. 10. A fragment showing a series of estates

Only the number 30 can be read on the upper left hand corner of the fragment, while traces of signs on the upper right edge are too damaged to be decipherable, though the sign ‘sar’, probably indicating the presence of an area measurement, is visible. This area is bound by a curved line, forming another section with an inverted caption: [?] [...] sar 10 gín (? + 6 m²). Beneath this caption another curved line creates a third area at the lower end of the fragment, though no inscription is preserved in this portion.

⁸³ Louvre AOT b361; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

The practice of indicating the location of cities or estates with circles is known from other examples, such as a contemporary plan from Gasur which shows the location of a roughly 300 ha estate within a wider area of around 8 by 11 km².⁸⁴ Similarly, a Kassite period map which shows the irrigation network in the Nippur region⁸⁵ and the Babylonian Map of the World⁸⁶ use circles to indicate cities or regions, within which their names are inscribed. In all these examples, however, it is clear that the circles are used as a purely symbolic device to indicate location, and not because they are analogous to the city or estate's physical shape.

Since this Old Akkadian plan deals with much smaller plots of land, as indicated by the size of the circular estate at only 258 m², the scribe was working with an area of sufficiently small enough scale to draw boundaries and field shapes which were representative of the shape of their real life counterparts. Circular fields are unknown from the ancient Near East, however, where agricultural units appear to have been divided into either rectangular or trapezoidal plots. In this case, the circle may represent some topographic element which is not a field or, the more likely explanation, the scribe opted to use a circle to indicate the location of the plot within the context of a larger area, and its shape is not an accurate representation of its physical boundaries.

Another fragment shows a series of three fields, in this case rectangular in shape, separated by single line boundaries (fig. 11).⁸⁷ In the uppermost section, only a series of numbers can be read, with no unit of measurement. The field in the middle section contains the signs *gána a* [...] *a*, '...field...', while an area in the left hand corner of the middle section is demarcated by a double line and contains the signs [...] *a*. The lowest field in the series of three is oriented by a label at the top of the section:IM-kur '...east', beneath and to the right of which is a fragmentary series of numbers, again with no unit of measurement.

⁸⁴ See pp. 223-229

⁸⁵ See pp. 96-103

⁸⁶ See pp. 235-248

⁸⁷ Louvre AOT b363; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

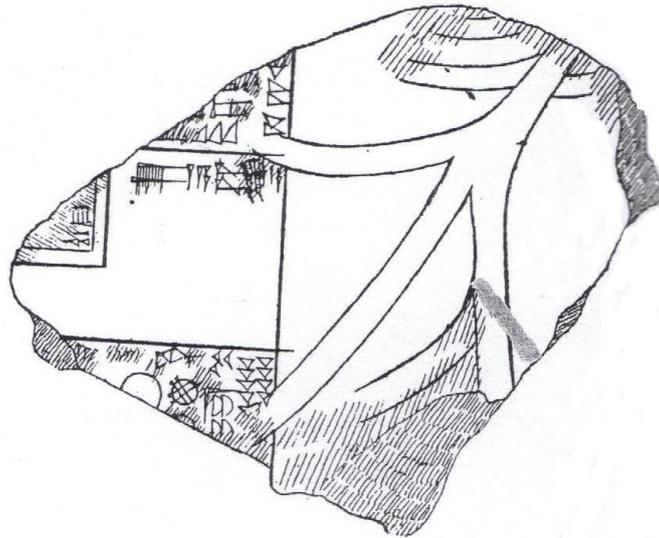


Fig. 11. Fragment of a plan showing a series of three fields with their supporting irrigation system

The right hand side of the tablet shows a network of canals branching from a single channel, indicated by parallel lines. The uppermost branch leads to the field on the top left hand corner of the fragment, the central branch leads to the lower field, and the lower branches are likely to lead to plots no longer preserved on the tablet. The approach to showing the combination of fields and waterways on this tablet is unusual in the context of Near Eastern field plans, which often show canals directly bordering fields, but rarely the fuller arrangement of the irrigation system and the sources of canal branches.

Another fragment also shows a plan on which two canals branch from a primary waterway, accompanied by a brief inscription on the reverse of the tablet (fig. 12).⁸⁸ The canals on this plan are also drawn with parallel lines, though they are less naturalistic than those of the previous fragment, and would be less obviously identifiable as waterways without their accompanying labels. The canal which runs the length of the lower edge of the fragment appears to be a primary waterway which feeds the two canals branching from it, labelled ^{ri}d^{ti}r sikil, 'Pure Plant [Canal]'.

⁸⁸ Louvre AOT b364; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

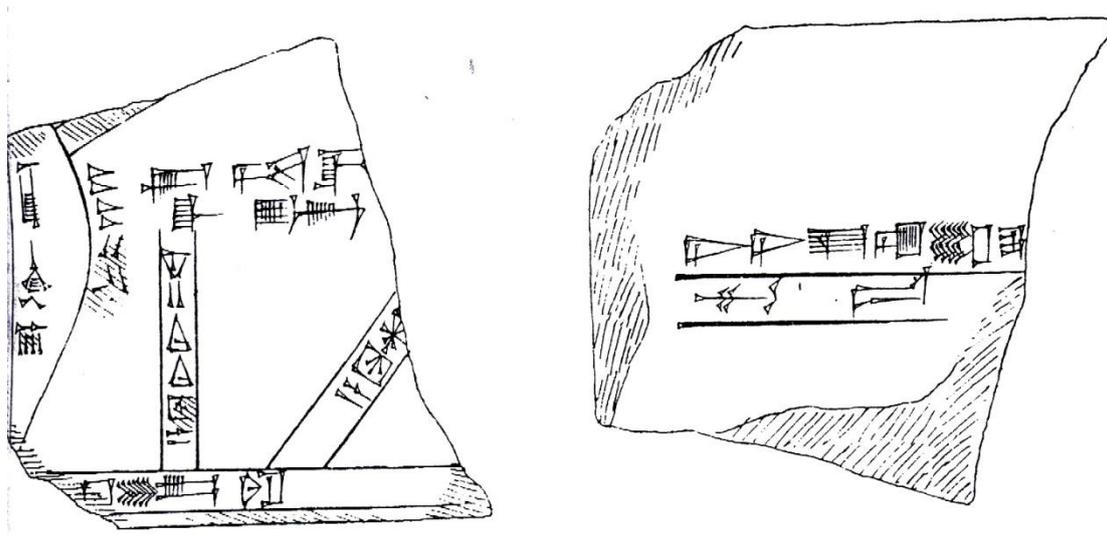


Fig. 12. Fragment of the obverse of a tablet showing a field and canals (left), with an inscription on its reverse (right)

The caption on the channel which branches diagonally from the ‘Pure Plant Canal’ is only partially preserved, and reads ^{id}an- [...]. This canal appears to have ended in another field or part of the estate which is now missing from the plan. A third canal labelled ^{id}i-lí-tab-ba leads vertically from the ‘Pure Plant Canal’ and ends in a field which contains the caption gána ab [da] [...] gal é-ig, ‘field..... A caption to the left of the Ilitabba Canal oriented at a 90° angle contains a broken sign followed by the number 4, while a curved line which runs parallel to this inscription borders a separate area inscribed with the label e-sud gána... ‘barley field...’ The reverse of the fragment contains a two line inscription:.....: ì-lí-iš dub-sar-e [...] ⁸⁹ mu du, ‘the scribe....went/put in place’, perhaps a reference to the scribe undertaking the survey on site in order to draw up the plan.

Another fragment is preserved with a very partial inscription (fig. 13):⁹⁰ [...]....sar nindan- [...] [...] ì-lí- [...], which appears to reference the total (sar) of a field or estate in nindan, though the relevant numbers are now missing. This inscription is bordered on the left hand side by a single curving line with an unusual series of short pairs of cross lines, though without the larger context of the complete plan it is unclear what these represent.

⁸⁹ This translation is used as an exemplar on ePSD ‘ili’ (accessed 19/06/2012)

⁹⁰ Louvre AOT (RA IV no. 71); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

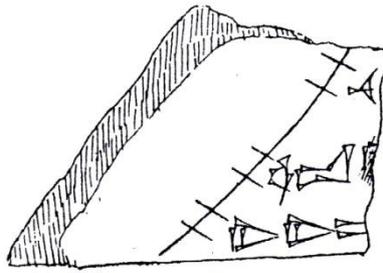


Fig. 13. Fragment of a field plan with a caption providing a total area in nindan

A fragment of similar size contains two signs in the centre of the plan: [e?] gána, ‘barley field’ though these symbols are written inside a double-line which runs through the middle of the fragment, a graphic symbol generally used to indicate walls or canals (fig. 14).⁹¹ A poorly preserved caption on the left hand side of the fragment records a surface measurement: 4 iku [...].

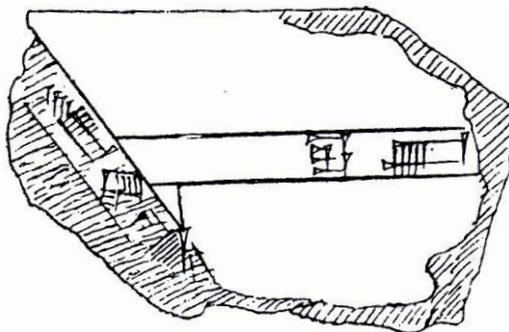


Fig. 14. Fragment of a plan which references a surface area of 4 iku

A set of two double lines also divide a fragment which shows at least three fields, though since no caption is preserved on either of these parallel line sets, it cannot be stated with certainty that they represent irrigation canals (fig. 15).⁹² A series of numbers can be seen on the uppermost portion of the tablet, while a more well-preserved caption in the area below reads: gána gud-an ereš-dingir, ‘field of the Bull of Heaven Priestesses’.

⁹¹ Louvre AOT b 367 (RTC no. 158); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

⁹² Louvre AOT b; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

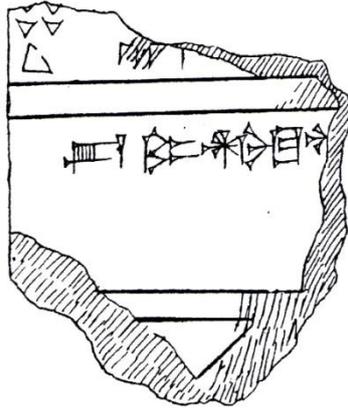


Fig. 15. Plan fragment showing a field

A fragment showing a plan of very similar style might originally come from the same tablet as the previous example (fig. 16).⁹³ Here, a double line borders the lower edge of the tablet, while a single line divides the fragment into two fields. If this fragment is analogous to the previous example, it seems that the scribe used a single line to indicate a boundary between fields and a double line to represent another feature, most likely irrigation canals or ditches. The caption in the upper field on this fragment indicates a fairly large field of 10 iku [...] (3.6 ha...), while the caption in the lower field reads 10 maš iku [lugal] [...], '10 ½ iku (3.78 ha) [belonging to] the king', which presumably represent a royal estate.

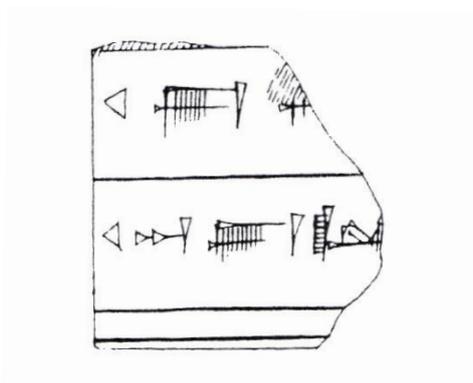


Fig. 16. Plan fragment showing a field belonging to the king

⁹³ Louvre AOT b373 (RTC no. 152); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

Aside from the large fragment showing the canals drawn in a naturalistic style (fig. 11), the previous examples have used straight double lines to represent waterways, which can only be identified as canals with certainty when their accompanying captions are preserved. Another series of fragments, however, employs a much more effective method of symbolising water by using the standard parallel lines which are either altered to follow a sinuous course or filled with undulating lines to imitate waves, a technique known as ‘water-lining’.

The first of these fragments which features the water-lining effect shows a canal following a gentle curve along the left hand side of the fragment, from which a pair of parallel lines emerge at a right angle, bordering a field (fig. 17).⁹⁴ It is possible that these straight parallel lines represent a small irrigation ditch fed from the larger waterway on the left, though it is unclear why the scribe chose to represent this channel without using the water-lining technique; perhaps because the watercourse to the left represents a main irrigation artery, while the canal bordering the field is a smaller canal or ditch. It is also possible, however, that this double-line simply represents a border which the scribe used to demarcate the upper area from the agricultural units below, which are themselves divided into smaller plots by single lines.

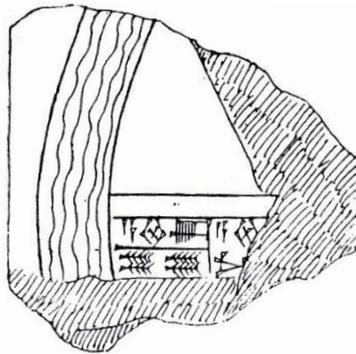


Fig. 17. Fragment of a plan showing a series of fields bordered by a canal or river

The area below the double line is divided into three fields or sections containing broken area measurements. The upper left hand section is inscribed with the caption *a šà iku*, ‘(1) iku area’, the section below is broken, though it contains the signs *še še [...]*, which is likely part

⁹⁴ Louvre AOT b 365 (RTC no. 153); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

of an incomplete reference to grain. The area to the right contains an area measurement in nindan, which in this case is broken: a šà [nindan-]DU [...].

A smaller fragment shows the same combination of a river or canal depicted using the water-lining technique, joined to a pair of straight parallel lines crossing the centre of the fragment diagonally (fig. 18).⁹⁵ Like the previous example, the blank parallel lines may represent a smaller irrigation canal which joined the main waterway on the left hand side of the plan at a point on the tablet now broken off. The use of a circle to indicate an estate is the same technique as that used on fig. 10, though in this case the quality of the drawing is such that the inscription in this circle cannot be deciphered satisfactorily.

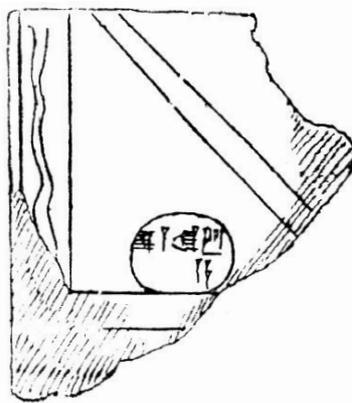


Fig. 18. Fragment showing an area bordered by a waterway with a circular estate

Another fragment shows an area bordered on two sides by a waterway which wraps around a corner, again depicted using the water-lining effect (fig. 19).⁹⁶ A pair of parallel lines, this time without water-lining, can be seen to the immediate interior of the waterway. Again, it is unclear what these parallel lines represent, and whether they are analogous to a physical feature in the field or whether they simply indicate a hypothetical border. The caption inside these lines again provides an incomplete area measurement: [...] maš nindan-DU [gán-né-a]

⁹⁵ Louvre AOT b 370 (RTC 156); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

⁹⁶ Louvre AOT b 366 (RTC 157); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

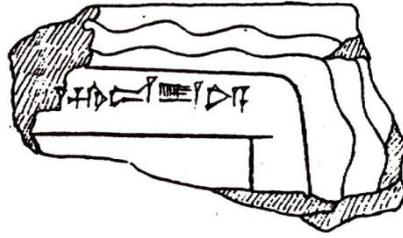


Fig. 19. A fragment of a field bordered by a river or canal with a partial area measurement

A further two fragments which might have originally come from the same tablet also show waterways, though no inscription is preserved on either (fig 20).⁹⁷ The first piece shows a curved river or canal branching in two directions towards the lower left hand corner of the fragment, while the second shows two canals, the larger of which has an attached square which might represent a reservoir or building. The scribe to some extent scaled the canals on this plan, since the lower of the two is half the size of the other, perhaps suggesting that this is an irrigation ditch which is subsidiary to the larger waterway at the top of the fragment.

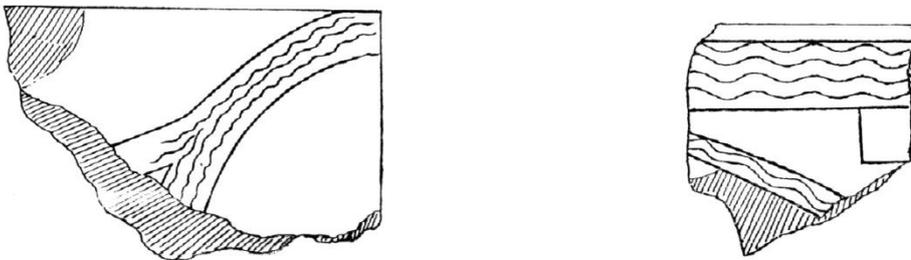


Fig. 20. Two fragments rivers or canals indicated by water-lining

An unusual approach to the representation of canals is found on another fragment showing a field with an area measurement of 3 maš [iku] [...], '3 ½ iku...' (1.26 ha). The plan is oriented on the left hand side, with the partial label [IM-]mir, 'north' (fig. 21).⁹⁸ The representation of the canals on this fragment is unique in the entire Near Eastern cartographic corpus, since the

⁹⁷ Louvre AOT b 369 (RTC 160) and AOT b 371 (RTC no. 154); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

⁹⁸ Louvre AOT b 368 (RTC 171); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

scribe drew them as two parallel undulating lines, rather than the straight or curved lines filled with the water-lining effect or blank parallel lines found on the examples above. The name of the lower canal is indicated by an adjacent caption rather than a label inscribed inside these parallel lines as ^{id}lum-ma-gim-du₁₀.⁹⁹

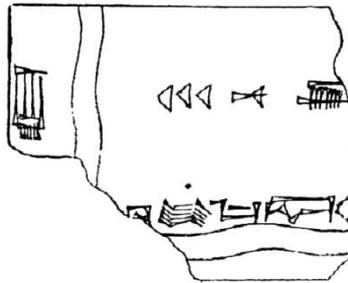


Fig. 21. A fragment showing a field bordered by canals depicted with undulating lines

The final Old Akkadian field plan shows a highly schematic representation of a group of field plots divided by single borders with adjacent canals (fig. 22).¹⁰⁰ This example shows little of the graphic differentiation between water and land found in some of the examples discussed above, and identification of the various elements would be extremely difficult without their accompanying labels.

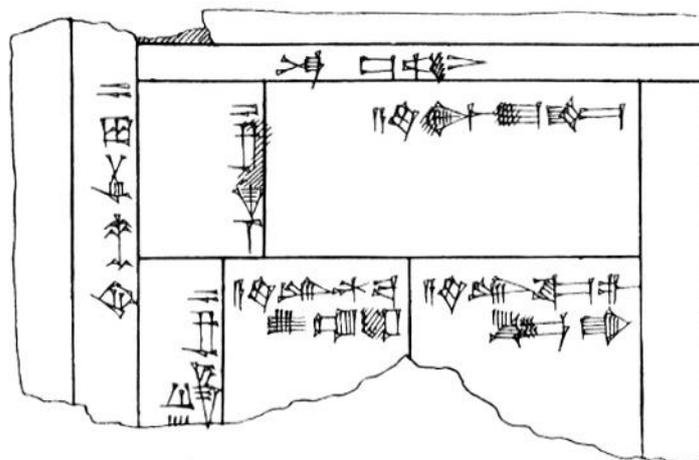


Fig. 22. A plan of a series of fields bordered by canals

⁹⁹ Translation from Röllig 1980: 464

¹⁰⁰ Louvre AO 3390 (RTC 258); clay; dimensions unknown. Provenance: Girsu, findspot unknown.

1' pa ₅ ^{giš} šining	tamarisk ditch
2' ^{íd} pa ₅ mu DI/silim	Pamudi Canal
3' illu [ušbar _x (SUMAŠ.MAŠ)]	waters...
4' a šà [ušbar _x (SUMAŠ.MAŠ)] ke ₄ ne	field of the...
5' illu lú [...] ba [...]	waters...man
6' a šà an ba ú/kuš dub sar	field pasture
7' a šà lú ka mar sa ₆ ga	field of the good woodman

It appears that the canal on the left hand side is a primary waterway, which feeds the channel on the upper edge of the fragment referred to by the term 'pa₅', indicating a subsidiary ditch.¹⁰¹ We would therefore expect this ditch to be narrower than the main canal, as it is on the tablet, which perhaps suggests an attempt at scale by the scribe.

Ultimately, the Old Akkadian fragments gathered here reveal much about early approaches to cartography in the ancient Near East and the development of field plans as a documentary genre. It can also be noted that, while some of the fragments are likely to have once belonged to the same tablet, there is enough variation within the drawing style and information provided on the fragments to conclude that they are from multiple field plans.¹⁰²

Due to their fragmentary nature and provenance from a single site, however, it is questionable how much they reveal about the agricultural profile of Mesopotamia during the Old Akkadian period, which is perhaps why they have attracted little previous interest. Ownership is rarely inscribed on the plans, though one field is identified as a royal estate and another as belonging to the 'Bull of Heaven Priestesses'. This does not necessarily indicate that all these fields were institutionally owned, however. In fact the total areas of the plots, when known,

¹⁰¹ See Powell 1988: 169 for an explanation of expressions related to waterworks and irrigation.

¹⁰² It is conceivable, for example, that AOT b 369 (RTC 160) and AOT b 371 (RTC no. 154) once belonged to the same plan, though without the original tablet this can only be speculated.

are less than 4 ha, and therefore of sizes which are not inconsistent with fields owned by private individuals.¹⁰³

While there are few complete inscriptions on the plans, the drawings themselves often show a diverse approach to the representation of topographic features, with a particularly naturalistic approach seen on the canals in fig. 11, followed by a group of fragments on which scribes employed the water-lining technique (figs. 17, 18, 19, 20 and 21). Other examples, such as fig. 22, anticipate the highly schematic approach found on later field plans, particularly those of the Late Babylonian period.¹⁰⁴ Such diversity in the Old Akkadian plans suggests this was a genre which had not yet become 'standardised' in approach, even at the site of Girsu, which indicates that graphic plans had not at this point become a common method for recording field survey data.

In spite of their variations there is, however, a certain amount of convention evident in the plans; the use of captions which are oriented towards the relevant border, for example, is a technique regularly found on later field plans, in addition to many examples in the Near Eastern building plan corpus where measurement labels are oriented towards the wall to which they refer.¹⁰⁵ The parallel line waterway, either left blank or decorated with the water-lining effect, is also found on maps of irrigation networks,¹⁰⁶ city plans¹⁰⁷ and regional maps.¹⁰⁸ Yet perhaps the most significant feature found on the Old Akkadian field plans are their orientation labels, which appear on three of the fragments collected here (figs. 8, 11 and 21). Although a contemporary regional plan from Gasur, discussed below,¹⁰⁹ is also oriented, the earliest field plan tablets previously thought to regularly employ the use of border orientation are those of the Late Babylonian period.¹¹⁰

It is unknown whether these plans were preserved in private or state archives as official administrative documents, though it is clear that the fragments collected here represent a group of extremely well-executed drawings on clay tablets, which display at least some evidence of a 'standard' cartographic approach to recording survey data. Their standardisation is manifested in their written aspects, however, such as their use of

¹⁰³ Gelb, Whiting & Steinkeller 1991: 26

¹⁰⁴ The Late Babylonian field plan corpus is discussed below, pp. 69-74

¹⁰⁵ Building plans are discussed in chapter four.

¹⁰⁶ Irrigation maps are discussed in chapter three.

¹⁰⁷ City plans are discussed in chapter five.

¹⁰⁸ Regional maps are discussed in chapter six.

¹⁰⁹ See pp. 223-229

¹¹⁰ Nemet-Nejat 1982: 274

orientation and measurement captions, and less in their graphic conventions. If they were routinely used as administrative tools, such as sale contracts, we might expect further uniformity in the graphic approaches used by the scribes, which is not in evidence on the examples collected here.

THE UR III PERIOD

The Ur III field plans are better represented in the Near Eastern cartographic corpus than their Old Akkadian counterparts, with over thirty examples discovered at a range of sites across Southern Mesopotamia.¹¹¹ The majority of Ur III field plans can be categorised as ‘temen’ plans, which provide a graphic account of how the areas of irregularly shaped fields were calculated by surveyors, who then recorded this information in plan format. Dunham¹¹² suggests that the term ‘temen’, usually translated as ‘foundation’,¹¹³ refers in this context to an area which was physically marked out on fields using ropes and pegs, and the surveying and calculation processes used by the scribes can be clearly followed on the plan diagrams.¹¹⁴

First, the surveyor would mark out one or more roughly rectangular quadrilaterals, referred to in a brief written summary on the reverse of the tablet as the ‘temen’, the area of which would be calculated by multiplying the average of the two short sides by one long side. Any remaining parts of the field outside the initial quadrilateral would then be marked out as additional trapezoids or triangles, the combined areas of which would be subtracted from the main figure. The remaining area of the main quadrilateral would then be added to the areas of the additional outside trapezoids and triangles in order to obtain the total area of the field.¹¹⁵

This process is neatly illustrated by a tablet from Lagash, which contains a graphic field plan on its obverse with a written summary on the reverse (fig. 23).¹¹⁶ In this case, the central temen is presented as a rectangle with an area of $45 \frac{1}{2}$ [iku] and an adjacent trapezoid of $10 \frac{1}{2}$ [iku], with a combined total of 56 [iku]. The total of the external squares and triangles which border the temen is also given on the reverse, as $10 \frac{1}{2}$ iku, with the total area of the field given as $66 \frac{1}{2}$ iku (23.94 ha).¹¹⁷

¹¹¹ For the most complete collection of Ur III field plans, see Liverani 1990: 148-154

¹¹² 1986: 37, also Stephens 1953: 2. For a detailed investigation of the term ‘temen’ see Dunham 1986: 31-64

¹¹³ Cf. ePSD ‘temen’, accessed 14/03/12

¹¹⁴ See pp. 20-21 for a discussion on Near Eastern surveyors.

¹¹⁵ Dunham 1986: 33

¹¹⁶ Harvard Semitic Museum HSM 1659; clay. Provenance: Lagash, findspot unknown.

¹¹⁷ Dunham 1986: 34; Friberg 20: 145.

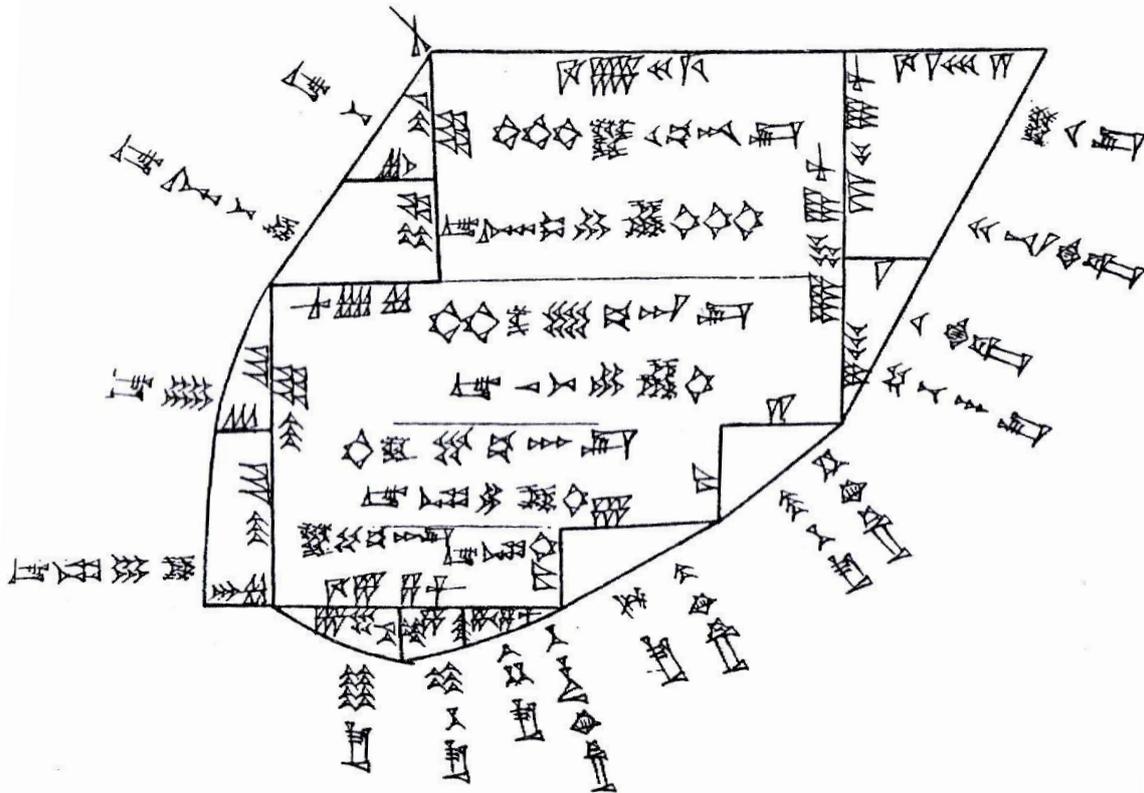


Fig. 25. An Ur III field plan showing the region around the town of Šulgi-sipa-kalam-ma

Like the smaller plans from Lagash and Umma, the large central region is also referred to in the inscription on the reverse as the ‘temen’, which in this case is divided into four rectangular areas bordered by a series of additional triangles and trapezoids.¹²² The length measurements and total areas of both the temen (136 bur 1 eše 1 iku 1 nindan) and the peripheral areas (503 bur 1 eše 3 iku 1 ubu 1 nindan) are given on the face of the plan, in addition to their combined total which provides the complete area of the field, 639 bur 2 eše 5 iku (4150 ha). This information is once again summarised in an inscription on the reverse of the tablet, which provides a number of additional details including the names of the surveyors

¹²² For a detailed analysis of the calculations and measurements on the plan see Quillien 2003: 14-23 and Friberg 2011: 144-145.

who carried out the calculations (Lugal-itida and Ur-^dIgalim), and the year in which the survey was carried out (mu ša-aš-ru-umki ba-ḥul, ‘The year Šašru was destroyed’).¹²³

A line on the reverse also states that the plan represents the area around the town of Šulgi-sipa-kalam-ma (‘Šulgi is the shepherd of the land’), though clearly the plan is only concerned with dividing this area into either ‘hilly terrain’ or ‘cultivable land’, and therefore its agricultural capacity. It can also be seen that the computation process followed on the Ur III temen fields plans, whether they represent agricultural units of just over 32 ha, as seen on the Umma example, or much larger areas of 4150 ha seen on the field of Šulgi-sipa-kalam-ma, is essentially the same.¹²⁴ The process of recording and presenting this information in plan form is therefore not adjusted according to the size or type of land shown since, as mentioned above, the Šulgi-sipa-kalam-ma plan is concerned with different types of terrain. Rather, different types of land are graphically homogenised on the plans, which are primarily concerned with presenting area dimensions.

It is likely that the system of field measurement found on the temen plans was in use before the Ur III period,¹²⁵ though it is not detectable on the earlier Old Akkadian field plans, which offer no indication of the surveying method used. Liverani therefore doubts whether these temen plans can really be considered representative of agricultural cells during this period, preferring to compare them with mathematical texts which may have served a didactic purpose by illustrating the measurement and calculation processes for student surveyors.¹²⁶

In attempting to determine whether the temen plans are representative of the Ur III agricultural landscape, a useful comparison can be made between the graphic plans and a group of administrative documents known as ‘implicit plans’. These texts contain written accounts of institutionally owned land managed by contracted farmers on behalf of the temple,¹²⁷ and are well-illustrated by a group of over seventy texts from Lagash, known as the ‘Round Tablets’, which were drawn up in order to calculate expected yields before harvest. Each tablet generally contains the details of multiple fields, the areas of which were calculated using a similar process to the temen plans, though in this case only one short side was multiplied by a long side, followed by additions and subtractions of subsidiary areas.

¹²³ Quillien 2003: 23-24

¹²⁴ Although the number of detailed examples offered here is limited, it is well-established that the same calculation process is found on a number of graphic plans (see those collected in Liverani 1990: 148-154).

¹²⁵ Dunham 1986: 36 (see note 6)

¹²⁶ Liverani 1990: 148

¹²⁷ Liverani 1990: 158

Each field was then further divided into subplots based on expected yields, with the names of the relevant officials and farmers responsible for each unit also recorded.¹²⁸

The shape of the fields described in the Round Tablets are typically long and rectangular, with a length to width ratio of around 10:1, resulting in characteristically strip-like units designed to allow the maximum number of fields access to water supplies by aligning their shortest sides to irrigation canals. Two of these sides, one long and one short, were also often oriented by the surveyor. In the case of the Round Tablets from Lagash, the only points of orientation used are IM-mir, 'north', and IM-kur, 'east', and it seems that these terms were eventually adopted as synonyms for the words 'long' and 'short.'¹²⁹ Thus, the long side is always referred to as IM-mir and the short side as IM-kur, irrespective of whether these sides were actually facing in these directions.¹³⁰

This distinctive strip shape is not immediately obvious from the graphic Ur III plans, since the drawings are not correctly scaled. As in the case of the majority of Near Eastern maps and plans, the drawings were adapted to fit the shape of the tablets they were drawn on, and were then 'scaled' through written measurements. When these plans are re-drawn according to the measurements they contain, however, the resulting plans are much more representative of the strip-like fields described in the Round Tablets, as shown by a scaled re-drawing of the field plan from Umma (fig. 26).

¹²⁸ Liverani 1990: 155

¹²⁹ See pp. 25-27 for discussion of ancient Near Eastern orientation.

¹³⁰ Liverani 1990: 158, who also points out that it is highly unlikely all these fields would be oriented in the same direction in reality, since agricultural cells had to accommodate irrigation canals and ditches which would branch from a main source in different directions. Each field would have to be aligned by its short end to an irrigation ditch in order to ensure water access.

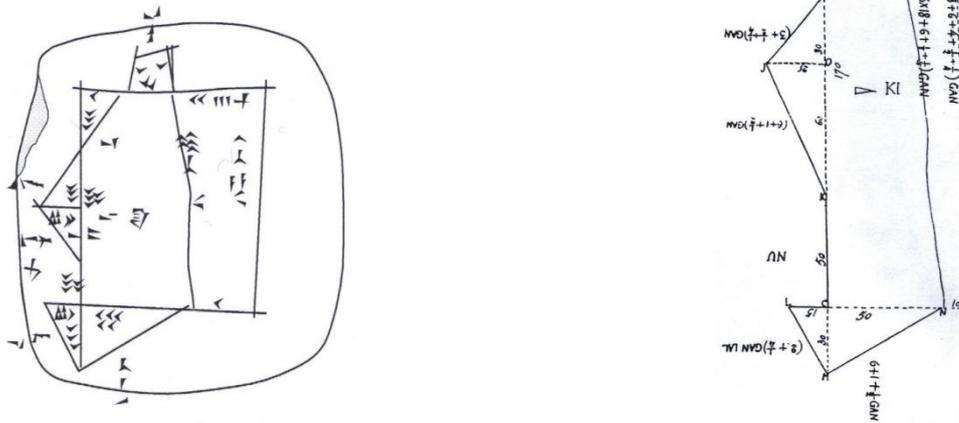


Fig. 26. The Umma field plan with a scaled re-drawing on the right

Although it can be shown that The Round Tablets and temen plans both describe long, strip-like fields, they tend to differ in the sizes of the fields they show. The Round Tablets reveal a concentration of field sizes between 100 and 125 iku (36 and 45 ha),¹³¹ leading Liverani to suggest the existence of a ‘standard’ size of 100 iku. The ‘standard’ field theory is also borne out by the distribution of fields among farmers; the Round Tablets show that a single farmer was assigned to manage a field of around 100 iku, while two smaller fields of around 50 iku were combined and assigned to a single farmer, and larger fields of 200 iku were split between two farmers. It therefore seems that the 100 iku ‘standard’ was based on the amount of land a single farmer was expected to manage.¹³²

In contrast, the total areas of the land shown on the temen plans vary enormously, ranging from the smaller fields of 66½ iku on the plan from Lagash discussed above (fig. 23), and 90 iku on the plan from Umma (fig. 24), to the much larger area shown on the plan of Šulgisipa-kalam-ma of 11528 iku. Moreover, these plans do not show a preference for fields of around 100 iku, or multiples of 100 as seen in the Round Tablets.

¹³¹ Based on data from the Round Tablets which list a total of 450 fields, 91.5% fall into the 50 and 160 iku category, with 55.1% of these with areas of between 100 and 125 iku (Liverani 1990: 157).

¹³² Liverani 1990: 157

These discrepancies could be attributed to a number of factors. Firstly, as Liverani suggests, it is possible that the temen plans do not represent real Ur III fields since they were used purely for the purpose of illustrating calculation techniques to student surveyors. However, it seems logical that any didactic exercise should be as representative of real agricultural land as possible in order to be an effective teaching tool, and significant differences between ‘real’ fields and those shown on the temen plans would therefore surely defeat their purpose.

Secondly, it must be noted that the Round Tablets only relate to the Lagash area, and there is little data from comparable agricultural archives concerned with other parts of southern Mesopotamia during this period. It is therefore unknown whether the 100 iku ‘standard’ field size applies only to the Lagash region, and therefore whether the information found in the Round Tablets can be extrapolated to other sites, which are better represented by the temen plans. It seems clear that the temen plans are not primarily concerned with the division and assignment of land according to labour requirements, since agricultural areas of 4150 ha, the total given on the Šulgi-sipa-kalam-ma plan, was clearly not managed by a single farmer. In this case, it is possible that the temen plans show land surveys made before labour divisions were made, while the Round Tablets describe the administration of land after they were divided between farmers.

Whether or not the temen plans represent surveys of real Ur III fields or should be considered hypothetical exercises, however, there are a handful of examples of other graphic field plans from this period which do not include the detailed calculation processes which characterise the temen examples. This almost certainly suggests they had a different purpose, and one which was undoubtedly administrative rather than didactic. Therefore, even if the temen plans cannot be categorised as real survey records, there is evidence that graphic plans were used for administrative purposes during the Ur III period.

This ‘simple type’ of Ur III field plan is exemplified by a tablet from Nippur, one of a group of seven field plans discovered in a secondary context during excavations at the Temple of Inanna.¹³³ The tablets appear to have been re-used as part of the platform foundation for the Parthian version of the temple, though it is assumed that they were originally housed in the Ur III temple archive. Only two plans from this group of seven are well-preserved enough to yield much information, the most complete of which, dated to the seventh month of Šu-suen

¹³³ Zettler 1989: 305

year 5, shows a plan of a parcel of land divided into five strips, bordered on one side by a canal identified as ^{id}GÌR (fig. 27).¹³⁴

In most of these strips the scribe included length and width measurements, in addition to the name of the person to whom the land was allotted for subsistence purposes. The broken strip at the top of the plan is assigned to Lugal-KA-gi-na, though no measurements are preserved in this section. The plot below contains border measurements and is inscribed with a total area of 49 iku (17.3 ha) assigned to the chief administrator of the temple (ugula é), identified from other documents in the Inanna Temple archive as Lugal-engar-du₁₀.¹³⁵ A caption on this strip also identifies the presence of a kis-laḥ, ‘threshing floor’ which, though not indicated graphically on the plan, is recorded as occupying an area of 2 iku of the 49 iku total for this strip. Like the Old Akkadian plan which contains written labels identifying a series of buildings on an agricultural estate,¹³⁶ it appears that only the presence of this threshing floor is indicated in this strip rather than its specific location in the field, since the label ‘kis-laḥ’ forms part of the information caption and is not deliberately written on a particular part of the plan.

The third plot contains border measurements and a recorded area of 5 ¼ iku (1.9 ha), allotted to an unknown person named Ur-lugal. The fourth plot has a total area of 14 ¼ iku (5 ha) and is assigned to Sag-^dEn-líl-lá, known from other documentary sources to be the son of Lugal-engar-du₁₀, the chief temple administrator mentioned in the second plot. The fifth plot of 9 iku (3.2 ha) is allotted to Lú-bal-sa₆-ga, known to be another son of Lugal-engar-du₁₀. The strip at the lower end of the tablet is assigned to ‘the Temple of Inanna’ (é ^dInanna-me), with no indication of its border measurements or area. Finally, the total area of the field is given in the summary on the reverse of the tablet as 77½ iku (27.35 ha).¹³⁷

¹³⁴ National Museum of Iraq, Baghdad IM 61646; clay; 7.4 x 5.8 cm. Provenance: Nippur, findspot: the foundation platform a late version of the Temple of Inanna.

¹³⁵ Zettler 1989: 306

¹³⁶ See fig. 8

¹³⁷ Zettler 1989: 306

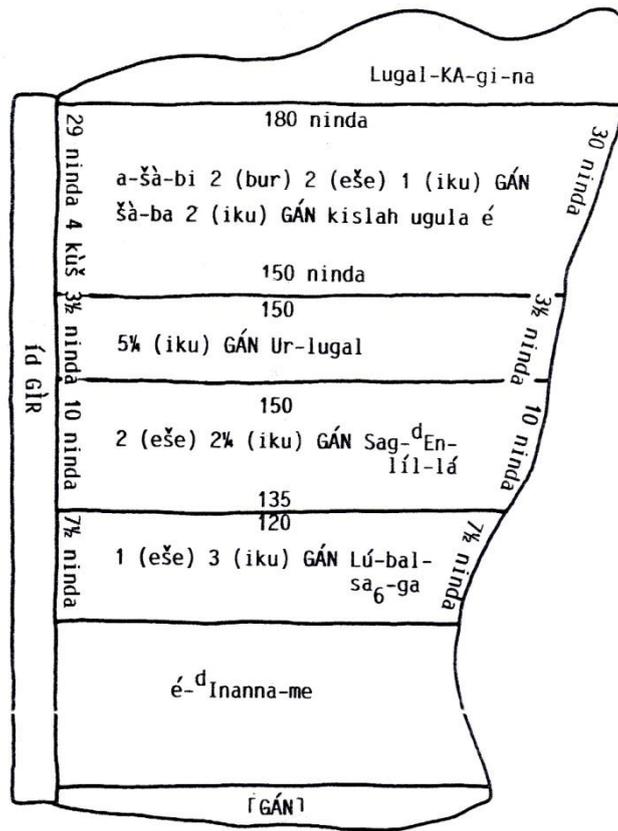


Fig. 27. An Ur III 'simple type' field plan from the Temple of Inanna in Nippur

Five of the remaining plan tablets from the Temple of Inanna are too poorly preserved to reveal much information, though a fragment of another tablet from the group also shows a field divided into at least five separate strips.¹³⁸ The lower end of the field is bordered by a canal, while the upper end of the plan is broken off. A number of length and area measurements are written on the preserved strips of land, though without all the plots and with no indication of the total area of the field given on the reverse, it is not possible to compare the size of the field drawn on this tablet with the more complete example discussed above (fig. 27).¹³⁹

The preserved portion of the summary on the reverse of the second tablet, however, includes the date of the plan (the first month of Šu-suen year 3) and makes reference to a piece of land

¹³⁸ National Museum of Iraq, Baghdad 6NT 778; clay; 5.6 x 5.8 cm. Provenance: Nippur, findspot: part of the foundation for the Parthian version of the Temple of Inanna.

¹³⁹ Zettler 1989: 307

with an area of 26 iku 21 ½ sar owned by Lugal-KA-gi-na, who appears on the partially preserved uppermost strip on fig. 27. Zettler¹⁴⁰ notes that if one rotates the second 90° to the right, the parcel of land roughly corresponds to the strip shown to belong to Lugal-KA-gi-na on fig. 27, suggesting that the less well-preserved tablet might show a more detailed plan of Lugal-KA-gi-na's plot shown on fig. 27.

Whether the second plan represents a more detailed plan of a plot shown on fig. 27, it is clear that the purpose of both plans was to record the basic dimensions and areas of land holdings with a record of whom they were assigned to. Zettler's interest in these plans is primarily focused on their significance for reconstructing the temple administration, since it seems that not only was Lugal-engar-du₁₀ assigned a subsistence plot, but also two of his sons who were apparently not associated with the temple administration in an official capacity, suggesting that the form of Ur III temple administration at Nippur was essentially patrimonial.¹⁴¹

These examples are also significant in the context of field plans during the Ur III period, however, since they suggest that the use of graphic plans was not solely restricted to the possibly didactic temen plans. Though the number of 'simple plan' examples is extremely limited, they represent evidence confirming that graphic plans were employed as administrative tools during the Ur III period.¹⁴² They also share a number of similarities with the Old Akkadian type, such as the use of single line field borders and oriented writing. While the temen plans appear to be an innovation of the Ur III period, therefore, the similarities between the Old Akkadian and simple Ur III types suggest a certain amount of continuity between eras, which will also be seen in the field plans of the Late Babylonian period.¹⁴³

¹⁴⁰ 1989: 307

¹⁴¹ Zettler 1989: 306

¹⁴² Note that it was previously thought that all agricultural land was requisitioned by the state during the Ur III period, though it has also been suggested that it is more likely that sales embargoes were placed on private land at this time (Postgate 1994: 173-191)

¹⁴³ The Late Babylonian field plan corpus is discussed below, pp. 69-74

THE MIDDLE BABYLONIAN PERIOD

The use of graphic field plans from the Middle Babylonian period is not associated with clay tablets, but rather with kudurru or ‘boundary stone’ monuments, produced between the Kassite and Neo-Assyrian periods.¹⁴⁴ These stone monuments were sculpted in the shape of stelae, tablets or plaques and contain inscriptions which generally commemorate royal land grants awarded to private subjects, though a number of examples are concerned with other entitlements such as labour and tax exemptions. It was originally suggested that kudurrus were erected in fields as boundary markers, though it has recently been established that they were probably displayed in temples,¹⁴⁵ as suggested by the lack of weathering on the extant examples and the discovery of one kudurru in situ in a temple precinct at Nippur.¹⁴⁶

There are one hundred and sixty examples of kudurrus and kudurru fragments from the northern and eastern parts of Babylonia, with a handful of examples from southern sites such as Larsa. The textual element of kudurrus tends to follow a set structure, recording the name of the boundary stone, a description of the land grant or exemption, a statement of the surveying (in the case of land grants), a list of witnesses and statement of royal sealing, curses and/or blessings and, finally, the date and colophon.¹⁴⁷

Though it is clear that they did not form part of the ‘standard’ graphic repertoire of kudurrus which are often carved with divine symbols or cultic reliefs, four examples from the corpus include graphic field plans. Two of these are found on stelae and two are inscribed on tablet-shaped kudurrus,¹⁴⁸ the earliest of which is a stele of Nebuchanezzar I (1126-1105), also known as the ‘Hinke Kudurru’.¹⁴⁹ This monument commemorates a royal land grant from Nebuchanezzar I to Nusku-ibni, a public servant in Nippur (fig. 28). In addition to a number of divine symbols at the top of the stele, the kudurru’s text contains a plan of the land granted

¹⁴⁴ The Babylonian kudurrus are unrelated to a group of fifty-seven monuments commonly known as ‘ancient’ kudurrus which are attested from the Uruk III and Sargonic periods, but do not contain graphic plans (Slanski 2003: 249). For ‘ancient’ kudurrus see Gelb, Steinkeller & Whiting (1991).

¹⁴⁵ Buccellati 1994: 284 who suggests that uninscribed kudurrus may have been placed in fields to act as reference points for surveyors, while Slanski (2003: 109) states that both inscribed and uninscribed kudurrus were erected in temples.

¹⁴⁶ BM 104405, also known as the ‘Hinke Kudurru’ (discussed below p. 63-63)

¹⁴⁷ Slanski 2003: 101. There are occasional variations on this formula caused by the shape of the stone or the circumstances of the transaction.

¹⁴⁸ Slanski (2003: 158) states that five kudurrus bear field plans: the ‘Hinke’ kudurru, and two British Museum kudurrus including BBSt 25. There is no mention of a plan on BBSt 25 by King (1912: 98), however, or in the description of the kudurru in the British Museum catalogue (accessed 28/07/2012). The fourth kudurru with a field plan is an unpublished example dated to the reign of Adad-aplu-iddina, which will not be discussed here. Slanski states, however, that this field plan is accompanied by labels with field measurements.

¹⁴⁹ Hinke 1911 (no. 5)

to Nusku-ibni, labelled with border orientations and measurements given in UŠ and GAR. The total area of the estate is given in seeding capacity, a system which expresses surface area in seed measurement,¹⁵⁰ of 22 gur 2 PI and 5 bán (c. 30.5 ha), and it is clear from the measurements given that the plan is not drawn to scale. The watercourses adjacent to the plot are also included; the Tigris on the field's southern border and the 'Royal Canal' to the north, in addition to captions identifying the adjacent properties on the east and north sides, the estates of Sumhur-galdu and 'the lords of the land' respectively.¹⁵¹

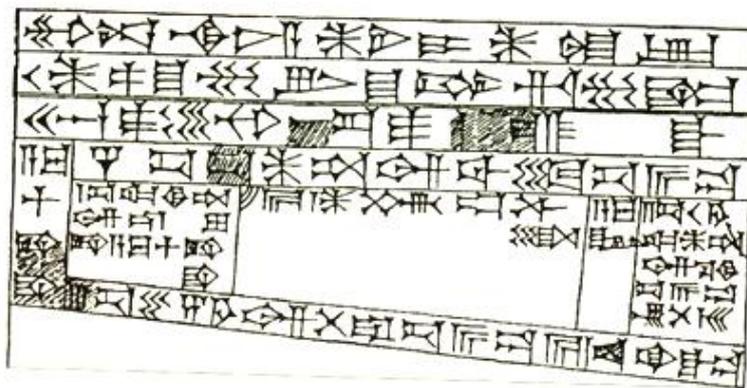


Fig. 28. Detail from the Hinke kudurru

The plan is little more than a basic schematic, much like the 'simple type' of Ur III field plan, with straight single lines used to represent the estate borders and double lines indicating the canals. The border information included on the plan, providing length measurements and orientation, follows conventions in use from the Old Akkadian period, though identification of the neighbouring estates, which are not graphically indicated, is an innovation of the kudurrus. A similar plan is found on an undated fragment of a stele shaped kudurru of unknown provenance.¹⁵² The fragmentary inscription on the face of the kudurru describes the transfer of an estate, illustrated by a simple single-line plan representing a trapezoidal field (fig. 29). The surface of the stone is eroded in places and parts of the plan and the signs to the

¹⁵⁰ See appendix II for Near Eastern mensuration

¹⁵¹ Robson 2008: 169

¹⁵² British Museum BM 104405 (BBSSt 15); limestone; 14 x 17.1 x 8.3 cm. Provenance and findspot unknown.

right of the field are barely legible, though the remaining labels reference adjoining properties and the orientation of the estate.¹⁵³



Fig. 29. Detail of a line drawing showing the face of a kudurru with a field plan on the left hand side

The kudurru is sculpted from limestone and, as in the case of many stone monuments from the ancient Near East which include written text, the sculptor who inscribed the stele deliberately carved wedge-shaped cuneiform symbols in order to imitate the style of signs written on clay tablets with a stylus, even though this was not a natural effect of the engraving process when working with stone. It also appears, however, that the sculptor engraved the endings of the field lines with wedge shapes, as seen on a detail of the plan (fig. 30). These wedge-shaped endings serve no real purpose on the plan, though they are familiar from maps drawn on clay tablets with styluses, as seen on a number of Ur III field plans and contemporary building plans.¹⁵⁴ This suggests that the sculptor was aware of the graphic conventions found on clay tablet plans, and reproduced their characteristics in the version found on this kudurru.

¹⁵³ King 1912: 86

¹⁵⁴ Building plans are discussed in chapter four.



Fig. 30. Detail of the field plan on an undated kudurru with wedge-shaped line endings

A much more fragmentary kudurru in the form of a limestone tablet records a land grant by King Adad-aplu-iddina (1069-1048) to a Marduk-akhu-[...] (fig. 31).¹⁵⁵ Only ten lines of text are preserved on the fragment, though the remains of a plan of the estate are preserved on the obverse, partly constructed from the ruled off lines used to separate each line of text on the kudurru. The plan shows a rectangular field inscribed with measurements given in GAR, though unfortunately these are too fragmentary to calculate the total dimensions of the estate.¹⁵⁶ The orientation of the plot is also given, though this time the estate's cardinal directions are recorded in the body of the text, rather than in border captions on the plan itself. The field is bordered on the left hand side by the Takirru Canal (^{id}*ta-ki-ru*), which is indicated by a separate double line forming a box, inside which the name of the canal is written vertically.

¹⁵⁵ British Museum BM 103215 (BBS^t 26); limestone; 5.4 x 7.1 cm. Provenance and findspot unknown.

¹⁵⁶ King 1912: 99

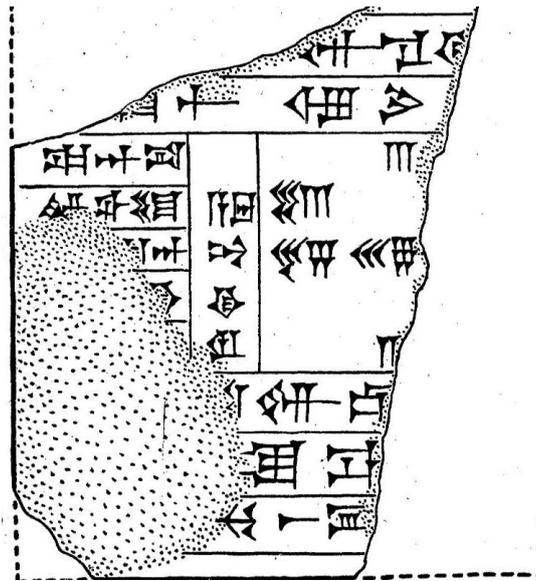


Fig. 31. A fragment of a kudurru with a plan of an estate bordered by the Takirru Canal

The quantity and type of information found on the kudurru plans also shows a departure from the earlier clay field plans. Though the Old Akkadian and Ur III plans contain a certain amount of border information, this is restricted to perimeter lengths used to calculate total areas and proximity to irrigation canals, while some of the Old Akkadian plans also include orientation. The border information provided on the kudurru plans, however, relates not only to perimeter measurements and field orientation, but also to the identification of adjacent estates. Indeed, though there are only a handful of plans on kudurrus, this type of border information is echoed in the written inscriptions of the majority of kudurrus related to land grants, reflecting their concern with the transfer of land ownership, specifically from state to individual.¹⁵⁷

With only four examples of graphic plans on kudurrus, it appears that survey information during the Middle Babylonian period was primarily recorded in writing.¹⁵⁸ For this reason, the inclusion of graphic plans on four kudurrus raises a number of questions, since there was clearly a well-established practice of describing land and field boundaries verbally. There appears to be little difference between the textual aspects of the kudurrus which display field plans and those which do not, and the presence of the field plan seems to have no effect on the written formula contained in the kudurru.

¹⁵⁷ Baker 2011: 300-306

¹⁵⁸ Baker 2011: 299

The wedge-shaped line endings found on the Adad-aplu-iddina kudurru plan (figs. 29 and 30), however, suggests that the sculptor was aware of the conventions of clay field plans, indicating that field plan tablets were perhaps not unknown during the Middle Babylonian period. It is therefore possible that graphic field plans were used by scribes to make initial surveys, on which archived written documents were then based. Furthermore, a number of the elements found on the kudurru plans, such as the expression of area measurement in seeding capacity and the identification of neighbouring properties, are also found on the largest field plan group from the ancient Near East, the Late Babylonian field plan corpus. Such continuity suggests an unbroken line in the practices of recording field survey data, some of which may have been initially recorded graphically, the results of which no longer survive.

THE LATE BABYLONIAN PERIOD

The largest collection of field plans from the ancient Near East comprises seventy Late Babylonian tablets, now housed in the collections of the British Museum and the subject of a detailed study by K. R. Nemet-Nejat in *Late Babylonian Field Plans in the British Museum* (1982). The provenance of the tablets, when known, is Babylon, and the majority are dated to the reign of Darius (522-486). Each tablet contains one or more simple schematic drawings which show the linear boundaries of rectangular or triangular plots of land.

The lines on these diagrams are very fine, though the line drawing below (fig. 32)¹⁵⁹ shows what appears to be evidence of the use of a stylus in the wedge-shaped line ending on the lower right hand corner of the plan. Comparison with a photograph of the tablet (plate I), however, suggests this is a result of the scribe using a fine pointed instrument which was more firmly incised in the clay at the end of this line, rather than the writing stylus used to inscribe the text on the tablet.

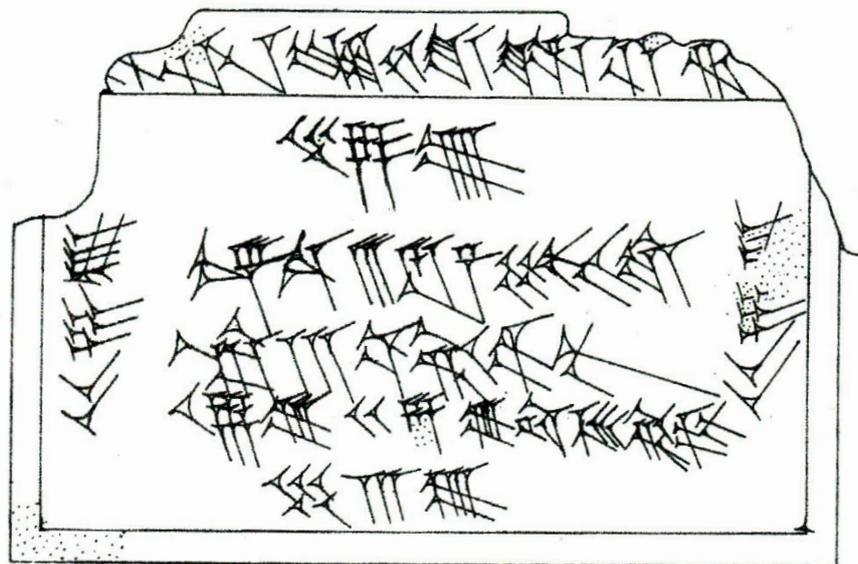


Fig. 32. A plan of a rectangular field with border and measurement captions from the Late Babylonian period

¹⁵⁹ British Museum BM 78148 (LBFP 1); clay; 5.8 x 7.6 cm. Provenance: Babylon, findspot unknown.

All the plans contain linear measurements expressed in *kùš* and (*šu-*)*si*, though their additional written content shows great variety, in the form of both annotations on the plans themselves and separate summaries often inscribed on the reverse of each tablet. Nemet-Nejat categorises the plans according to a four point typology based on the additional information contained in the field diagrams. ‘Type 1’ includes plans inscribed with total areas (or sub-totals, if a field contained different types of crop) in seeding capacity, the same measurement system used on the Hinke Kudurru plan.¹⁶⁰ ‘Type 2’ plans are also inscribed with seeding capacity, in addition to the number of date palms present in the field. ‘Type 3’ plans are inscribed with simple area measurements in *kùš*, *gi* and *nindan*, and ‘Type 4’ are either uninscribed or contain only the name of the plot owner.¹⁶¹

The Late Babylonian field plan tablets differ to the Old Akkadian and Ur III types in a number of ways; aside from the practice of including seeding capacity found in types 1 and 2,¹⁶² they also often record of the number of trees on the property, including date palms, grapes or fruit trees. The inclusion of soil type is also an innovation of the Late Babylonian field plans, and is expressed through the terms *zēru*, ‘arable’ or ‘planted’ land, *mērešu*, ‘cultivated land’, *zaqpu* ‘planted’, or *tatpū* ‘newly-broken ground’.¹⁶³

Canals are also sometimes noted graphically on the plans, using the conventional double-line method familiar from a number of other field plan examples,¹⁶⁴ and are often identified with written labels. The presence of built structures, however, is not indicated graphically but rather noted with captions, as seen on the Old Akkadian and Ur III ‘simple’ field plans.¹⁶⁵ The structures noted on the plans include *aškuttu* (assumed to be a kind of earth buttress) *limītu* ‘wall’, *kamru* ‘(garden) wall or earth ramp’, *bīātu* ‘houses’, and *abussi qī* ‘storehouse (of hemp)’.¹⁶⁶

A field’s proximity to canals for irrigation support and the presence of certain structures on the plots no doubt affected the price of the land, and their inclusion on the plans would

¹⁶⁰ See pp. 63-64

¹⁶¹ Nemet-Nejat 1982: 278-279

¹⁶² Also found in Hinke kudurru example, though not on any other clay tablet plan before the Late Babaylonian period.

¹⁶³ Nemet-Nejat 1982: 279, 296

¹⁶⁴ See particularly the Old Akkadian examples

¹⁶⁵ See particularly the Old Akkadian field plan AOT b 362 (fig. 8) which notes a number of buildings on an estate, and the Ur III plan 6NT 777 (fig. 27), which indicates the presence of a threshing floor on a field with the label *kis-laḫ*.

¹⁶⁶ Nemet-Nejat 1982: 300

therefore be important in a complete survey.¹⁶⁷ It does not appear, however, that the labels which represent these structures were deliberately inscribed on specific parts of the plans in order to represent their physical locations, since they are often included outside the border information written on the diagrams. It seems, rather, that they were simply written on the most convenient part of the field plan, in the same way as the Old Akkadian and Ur III examples.

Field orientation is provided in the border information though this is not, as Nemet-Nejat suggests,¹⁶⁸ a Late Babylonian innovation, as shown by the Old Akkadian field plan fragments which also provide cardinal directions. The amount of supplementary information which serves to locate the fields within a wider geographical area is unique to the Late Babylonian clay plan corpus, however, following the practice of identifying neighbouring estates found on the stone kudurru plans. Place names within the locality of the Late Babylonian fields are found in both the border information and accompanying summaries. Babylon, for example, is mentioned a number of times throughout the corpus, and is identified by various epithets including *uru lugal*, ‘The Royal City’ and *ki.[kug.]ga*, and ‘The Holy Place’. A number of Babylon’s landmarks such as *sūqū mūtaq nergal ša ḥadê*, ‘Procession Street of Nergal of Joy’ and *abul adad* ‘City Gate of Adad’, are also mentioned.¹⁶⁹ The cities of Sippar and possibly Kutha¹⁷⁰ also appear once in the corpus.

It is clear that Nemet-Nejat’s Types 1 and 2, plans which show plots inscribed with seeding capacity and date palms, represent agricultural units. The purposes of Types 3 and 4, however, which represent plots solely inscribed with area measurements or the owner of the unit, are much less clear. Nemet-Nejat describes these ‘vacant lots’ as ‘farm lands in urban areas’,¹⁷¹ though it has more recently been argued that they represent urban plots occupied by houses, as suggested by their omission of any information related to the land’s agricultural function.¹⁷² In this case, it can be said that the corpus contains ‘property plans’, in a combination of agricultural fields and urban house plots.

¹⁶⁷ Nemet-Nejat 1982: 300

¹⁶⁸ Nemet-Nejat 1982: 279, though she references the Gasur map and AOT b 362 as exceptions. Since at least two other Old Akkadian field plan fragments contain orientation, however (AOT b363 and AOT b368), it appears that the inclusion of cardinal directions on plans of the Old Akkadian period is more common than previously thought.

¹⁶⁹ Nemet-Nejat 1982: 306-307 (BM 34549/LBFP 23 and BM 46812/LBFP 27)

¹⁷⁰ Nemet-Nejat 1982: 444 (Text 50, BM 47671/LBFP 50 and BM 41233 + 46889/LBFP 63)

¹⁷¹ Nemet-Nejat 1982: 22

¹⁷² This position is taken by both Liverani (1990: 35) Baker (2004: 60).

A small number of the tablets in the corpus contain plans on both sides, though the majority provide additional written summaries on the reverse of each tablet. The content of these summaries varies, though they usually include a description of the plot shown on the plan, with a repeated statement of its dimensions. They may also include additional details concerning the location of the plot, references to a transaction related to the plot and the parties involved in this transaction, followed by the date of the tablet and witnesses.¹⁷³

The transactions described on the tablets with written summaries include sales and divisions of property, involving people who appear to be private individuals. This is suggested by the frequent inclusion of their professions in the summaries, which point to a diverse cross-section of individuals; professional designations include slave, hunter or fisher, judge, person of low status, barber, building inspector, inspector of artisans, priests and functionaries or commanding officer, shepherd of the ginû-sheep, scribe-translator, brewer, royal steward, priest of Nana, and administrator of Esagila.¹⁷⁴ The average size of the agricultural plots (Types 1 and 2) of between 10,000 and 100,000 square kùš (1.75 to 17.5 ha),¹⁷⁵ also suggests these fields are privately owned rather than institutional tracts of land.

Nemet-Nejat compares the written summaries on the Late Babylonian property plans with contemporary warranty deeds, noting that there are terminological similarities in the written formulae found in both types of document.¹⁷⁶ In this case, the plans may have been drawn on site, with the purpose of later being used to draw up warranty deeds or more permanent records. Nemet-Nejat notes that the quality of the tablets is often sketchy, and many of them contain mistakes and erasures, with little attention paid to scale.¹⁷⁷ It is demonstrated throughout this thesis that it was common practice in ancient Near Eastern cartography to scale maps and plans through written measurements, however, and the scaling of a map or plan appears to have little bearing on its use as an initial sketch or a finished diagram.

In light of this, these plans may represent a finished product and administrative record in their own right, and they have recently been linked with references to administrative reforms introduced by Darius near the beginning of his reign. These reforms included a new system of state taxation, in which all satrapies were required to pay tax based on cultivated land and the

¹⁷³ Nemet-Nejat 1982: 319-320

¹⁷⁴ Nemet-Nejat 1982: 441-443

¹⁷⁵ Nemet-Nejat 1982: 441-443

¹⁷⁶ For a detailed comparison see Nemet-Nejat 1982: 312-320

¹⁷⁷ Nemet-Nejat 1982: 310

type of crops it contained.¹⁷⁸ Indeed, a ‘royal tax registry’ is mentioned in three contemporary texts related to slave sales, one of which records the transfer of ownership of a slave which is entered in the ‘royal registry’.¹⁷⁹

This registry is expressed using an Old Persian loanword, *karri ammaru* from the verb *kārahmāra* which relates to the counting of people, suggesting that this registry was not established prior to the Achaemenid period.¹⁸⁰ A letter from 436 BCE provides a receipt for partial payment of a year’s rent on lands rented to the Murašu family also references this registry: É MU.ME[Š] *at-tu-ú-a šu-ú[ú] ina ka-[al]am-ma-ri [š]á LUGAL ina MU.22.KÁM [šá^m]Da-ri-ia-a-mu[š a-na] muḥ-ḫi-ia šá-ṭir*, “That property is mine; it was written down in my name in the royal registry in the twenty-second year of Darius.”¹⁸¹

If the Late Babylonian property plan corpus was part of a central registry, this would explain the narrow date range of the texts, the majority of which can be firmly placed in the reign of Darius. Such a limited chronology does not fit well with the profile of private archives containing administrative documents, which tend to include records from over a longer time frame, suggesting the Late Babylonian property plans represent a single corpus from an institutional context. Baker believes this context is likely to be the ‘royal registry’ mentioned above, to which the property plans provided a supplementary archive.¹⁸²

It seems that private property, whether it was agricultural, urban or, in the case of the texts mentioned above, slaves, was required to be recorded in this registry when it was exchanged. This would also provide an explanation for the mix of agricultural land and urban plots in the Late Babylonian property plan corpus, since the tablets are primarily concerned with recording property which was to be transferred, and are not specific to a particular type of land, as seen in the Old Akkadian and Ur III field plans, which appear to solely record agricultural plots. Further documentation might therefore contain detailed tax assessments based on the information contained in these plans, which may have been recorded in written format.

Though the plans are graphically simple, there is a certain amount of continuity between the Late Babylonian property plans and those of earlier periods, as seen in the use of oriented

¹⁷⁸ Dandamajev 1985: 29

¹⁷⁹ Text Dar. 551 (Stolper 1989: 84)

¹⁸⁰ Stolper 1976: 195

¹⁸¹ Text CBS 12965 (11-12) translated by Stolper 1976: 194

¹⁸² Baker 2004: 60

labelling and single line borders. It is clear that these plans represent different types of property, in this case both agricultural and urban, yet there is a uniformity to the plans and the written information they contain which suggests there was a 'standard' method of recording survey results in plan format, at least in Babylon, which developed out of Darius's administrative reforms. It is well-known that widely used administrative documents become 'standardised' over time, and the uniformity of the Late Babylonian property plan corpus suggests that the graphic representation of land plots served an administrative function which was more widely established than our limited examples suggest.

CHAPTER CONCLUSION

The field plans collected here represent by far the largest proportion of cartographic material from the ancient Near East, and not only provide valuable insight into the agricultural character and methods of recording survey data for their individual periods, but also the wider development of cartography. They display a number of shared conventions, such as the use of single lines to represent hypothetical field borders, the practice of indicating built structures verbally rather than graphically and, except in the case of the kudurru plans, oriented writing. All these features appear to be ‘standard’ in the graphic field plan genre, though a number of variations in each chronological group are much in evidence.

The Old Akkadian plans are fairly uniform in the type of written information they include, which is limited to field dimensions, the presence of waterways and buildings and in some cases the orientation of the plots. While they rarely contain written summaries, the inclusion of plot dimensions and orientation confirms they are field surveys, and the sizes of the fields, when known, indicate that they are likely to show private rather than state holdings. The detailed nature of their graphic elements suggests a certain amount of time and care was invested in their composition, which may indicate that they were preserved as ‘finished’ surveys rather than initial drawings made by scribes on site. Their graphic variation, however, reveals that there was no ‘standard’ method for communicating field survey information in this period, which suggests that graphic plans were not regularly used for this purpose.

While some of the Old Akkadian fragments take a highly naturalistic approach to the representation of topographic elements, some are much more schematic in design, such as AO 3390 (fig. 22). In this example, the canals are represented by simple double lines, and the identification of these features relies heavily on the use of written captions rather than graphic differentiation. The same kind of schematic approach is found on both the temen and ‘simple type’ Ur III plans, which also employ the use of single line boundaries and, in the case of the Temple of Inanna plan (fig. 27), a pair of parallel lines used to represent a canal. The simple type plans include the same type of information as their Old Akkadian counterparts, such as field dimensions, total areas and adjacent irrigation canals. The identification of the person to whom the land was allotted is more consistent in the Ur III simple type plans, however, where a name is included in every strip on both examples, even when the dimensions of the strip are not included.

The type of information included in the Ur III simple type plans suggests they represent real fields and, since it is assumed that they were once preserved in the Inanna Temple archive, it seems they were retained for administrative purposes. In contrast, it is unknown whether the temen plans represent genuine field surveys, or whether they are hypothetical exercises used to illustrate surveying and calculation techniques. The temen plans are much better represented in the Ur III corpus, and are the only field plan examples on which the surveying process is explicitly recorded, even though the methods found on these plans are known to have been in use well before the Ur III period and may have been employed to survey the plots featured in the Old Akkadian examples.

If these plans fulfilled a purely administrative function, it seems unlikely that the computation process would be included as a necessary part of the survey record. The management of the field, including the assignment of labour and calculation of yield estimates, would only require knowledge of the total land area, proximity to irrigation networks and perhaps the type of terrain. The calculations found on the temen plans would therefore be unnecessary for the type of survey required for general administrative purposes, indicating that Liverani's suggestion that these tablets are didactic tools may be correct.

The Middle Babylonian period is represented by only four plans on kudurrus, and since there are one hundred and sixty extant examples of these boundary stones, many of which commemorate royal land grants, it is clear that graphic plans were not considered integral to the 'standard' kudurru formula. The examples discussed here, however, display a number of common characteristics, such as the inclusion of border and area measurements and the identification of adjacent canals, though these characteristics appear to have developed out of the written conventions used to describe land in this period. The presence of field orientation suggests a desire to more firmly establish the wider geographical context of the estates shown, since the plots described by the kudurrus were granted to private individuals, and the establishment of legal boundaries was therefore paramount. It is possible that many of the fields shown on the Old Akkadian fragments were also owned by private individuals, which may account for the importance of orientation on these earlier fragments, though the kudurru plans further identify the locations of the fields by noting their neighbouring estates.

Some aspects of the kudurru plans are anomalous in the wider context of Near Eastern cartography, as seen in the use of purely vertical border captions rather than labels oriented towards the perimeters they describe. The use of oriented writing appears to be a common

convention found in Mesopotamian cartography, as will become clear throughout the rest of this thesis, yet the kudurru plans completely dispense with this practice. This may be because they were drawn by sculptors rather than scribes, who were less familiar with cartographic convention. Indeed, the only other plans featured on stone monuments, a building plan on a Statue of Gudea¹⁸³ and a temple plan found on a stele of Nebuchadnezzar I,¹⁸⁴ do not feature written captions or measurement labels.

The field plan on the kudurru fragment shown in figs. 29 and 30, however, displays an interesting feature in the form of a wedge-shaped ending on one of the field boundary lines. This is a completely unnecessary element of the plan, and this kind of effect only appears on clay tablet plans as a result of incising lines in the soft material using a stylus. The fact that such a feature is deliberately reproduced here may suggest the sculptor was imitating the style of a clay field plan, and therefore that graphic field plans drawn on clay tablets were more common in the Middle Babylonian period than the lack of finds suggests.

The kudurru plans also appear to anticipate a number of features found on the largest group of field plan tablets, in fact the largest single group of cartographic documents from the ancient Near East, the Late Babylonian property plan corpus. The seeding capacity measuring system, routinely used on Late Babylonian plan types 1 and 2, finds its forerunner in plan on the Hinke kudurru. Similarly, the inclusion of detailed border captions which identify the owners of neighbouring plots is also a feature of the kudurru examples which was subsequently employed on the Late Babylonian plans. It must be noted, however, that the labelling conventions found on both the kudurru and Late Babylonian plans may have been transmitted through written survey records rather than graphic plans.

It seems that the Late Babylonian corpus not only includes plans showing agricultural plots (types 1 and 2), but also urban housing plots (types 3 and 4). This mixture of land assigned to different purposes is not found in any other field plan collection, since all the earlier groups appear to deal exclusively with agricultural land. The methods by which both types of land are cartographically recorded are the same, however, where boundaries are indicated by single lines accompanied by oriented border captions. When canals are noted on the agricultural Late Babylonian plans, they are indicated by a simple double line, while buildings are indicated verbally rather than graphically. Like the Old Akkadian and Ur III

¹⁸³ See below, pp. 146-159

¹⁸⁴ See below, pp. 182-185

examples, it appears that only the presence of these structures, rather than their specific locations, are identified on the plans.

The written summaries on the Late Babylonian plans describe sale or exchange transactions, and it has been argued that the primary purpose of the tablets is related to the administration of a 'royal tax registry', established as part of a series of reforms by Darius. The quality of the plans may suggest they were commissioned as initial on-site field surveys made in order to prepare written documents which were then housed in a central archive. If the Late Babylonian corpus represents a single find from an institutional context, however, it is likely that these plans were also archived as part of this 'royal registry'. In this case, it appears that graphic plans were preserved as administrative documents in the ancient Near East, and were valued as permanent records of survey data rather than simply preparatory sketches made on site which were then disposed of.

CHAPTER THREE: CANAL AND WATERWAY PLANS

INTRODUCTION

Irrigation in the ancient Near East is a well-documented subject, and its unique impact on the development of Mesopotamian society and economy has received much attention from both archaeologists and historians.¹⁸⁵ While the most northern parts of the ancient Near East were able to rely on rain-fed agriculture in antiquity, southern Mesopotamia did not receive sufficient rainfall to produce crop yields large enough to support a growing sedentary population, and the alluvial plains of the south became covered with a complex network of irrigation canals from the Ubaid period onwards.¹⁸⁶

These canals were fed by diversions cut from the Tigris and Euphrates, though the Euphrates was the preferred river since it is the slower moving of the two and enters the plain at a higher elevation.¹⁸⁷ In addition to ensuring the fair distribution of water amongst landowners, silting and salinization were major issues dealt with by the authorities tasked with administering the irrigation networks of southern Mesopotamia. It was previously thought that the construction and maintenance of these canal networks were the responsibility of central government; indeed, it has been argued that failures within irrigation systems, such as over-salinization, were directly responsible for the collapse of a number of centralised authorities, as seen in the Diyala region during the third millennium, where extreme salinization rendered the land virtually infertile. Recent studies¹⁸⁸ on the administration of irrigation networks, however, have suggested that canals and waterways were more likely maintained by the direct consumers of the water, and administration was therefore much more local in scale than central.

The four Near Eastern maps related to irrigation are examined here in chronological order, starting with the unpublished ‘Schøyen Canal Map’, a tablet which shows the plan of an

¹⁸⁵ See for example R. McC. Adams. 1981. *Heartland of Cities: Surveys of Ancient Settlement and Land Use the Central Floodplain of the Euphrates* for a primarily archaeological approach, and M. Stol ‘Kanalisation’ *RLA* 5 (1980) for a survey of all the relevant textual material, particularly from a philological perspective.

¹⁸⁶ Borowski 1997: 182

¹⁸⁷ Tamburrino 2010: 31

¹⁸⁸ Postgate 1996: 178-179. For an Ur III period case study see Rost, S. 2010. ‘Irrigation Management in the Ur III Period’ (*EDANES*).

irrigation network with captions describing amounts of silt to be dredged from its primary canals. The second map shows a plan of a canal network in the Nippur region, in addition to some of the towns and fields serviced by these waterways. The third map, another fragmentary tablet, identifies the city of Sippar and the arrangement of the rivers and a spillway around the city. The final map, known as the 'Arahtum Canal fragment', shows the main branch of the Euphrates River running through a city which has been identified as Babylon and a small channel identified on the tablet as the 'King's Ditch'. Though limited in number, these maps not only inform us about the uses of cartography in the ancient Near East, but also the nature of the irrigation networks this society so heavily relied upon.

THE SCHØYEN COLLECTION IRRIGATION MAP

An unpublished Old Babylonian tablet in the Schøyen Collection is entirely unique in the Near Eastern cartographic corpus, since it appears to show a map used in the dredging and excavation of a series of major canals, possibly in the Larsa region. The map is drawn on the tablet's obverse and depicts a series of waterways represented by parallel lines inscribed with their names, in addition to their dimensions and the volume of silt to be removed from each channel (fig. 33).¹⁸⁹ The poorly-preserved reverse of the tablet (fig. 34) contains only written content, including the remains of a thirty day calendar and colophon which dates the map to the reign of the Old Babylonian king Ammi-ditana (1683-1646).

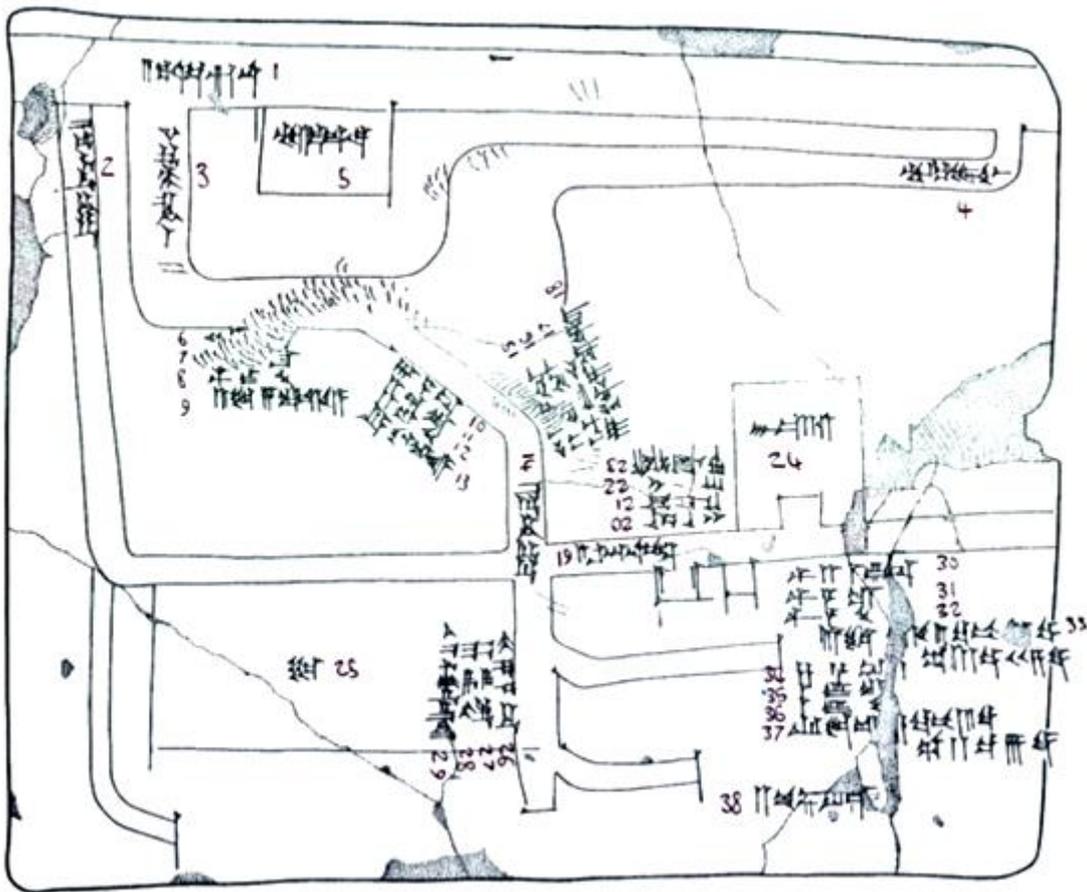


Fig. 33. Line drawing of the Schøyen Canal Map (obverse)

¹⁸⁹ Schøyen Collection MS 3196; clay; 9,5 x 12 x 2,8 cm; provenance and find spot unknown. I am extremely grateful to Prof. Andrew George, who has allowed me to use his line drawings of MS 3196 in this thesis.

As mentioned above, the removal of silt was central to the task of canal maintenance, and this map appears to have been drawn by the individual tasked with calculating the amount of material to be removed from each canal, in addition to how many workers (erín) were needed to complete the project. The captions on the map are written in a particularly cursive style with those on the obverse generally well-preserved, though the scribe appears to have omitted a number of signs in certain labels. In this translation, line numbers are assigned to the names of landmarks and canals first, followed by the captions containing dimensions and volumes, and finally the longer inscription related to numbers of workers located on the lower right hand corner of the tablet.

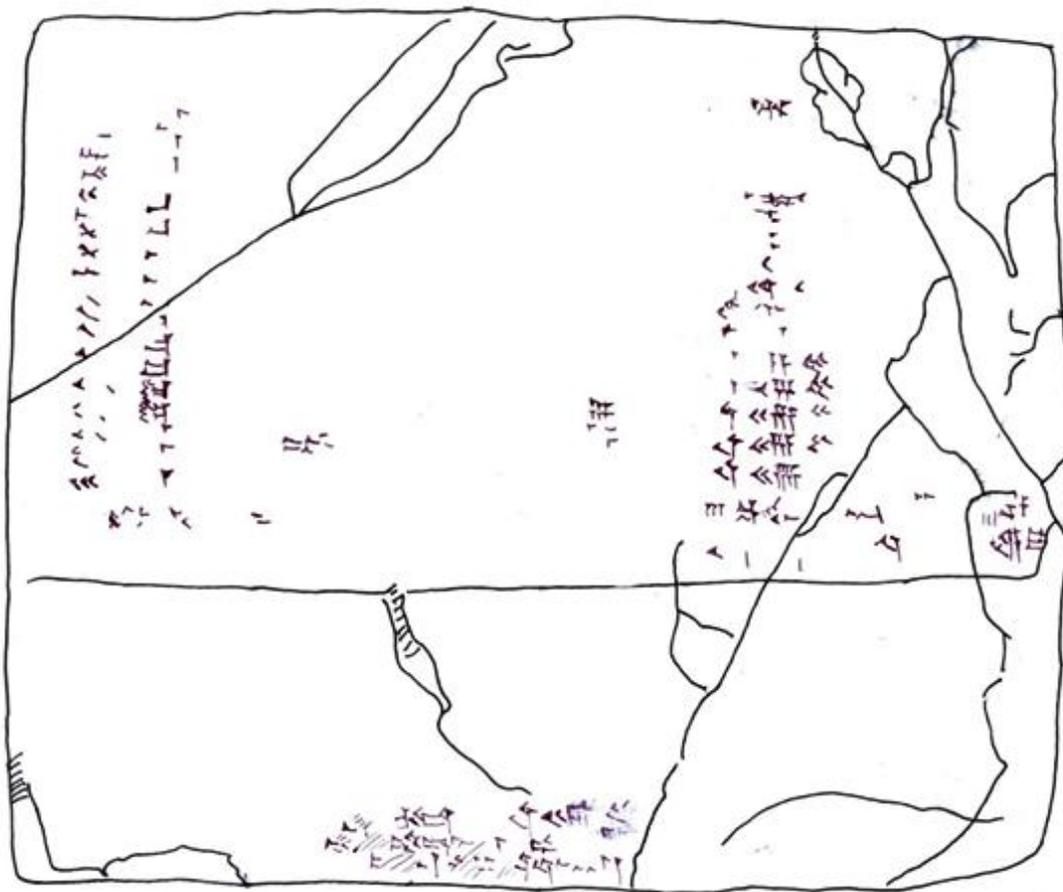


Fig. 34. Line drawing of the Schøyen Canal Map (reverse)

The Obverse of the Tablet

1' ^{íd} ud-kib-nun-na	Euphrates River
2' ^{íd} da-di	Dadi Canal
3' mu-sa ₆ -ah-ḫi-rum	Musaḫḫirum
4' mu-sa ₆ -ah-ḫi-rum	Musaḫḫirum
5' kun-íd-da ^{ki}	Kunidda ('Tail of the River')
6' [20] [nindan]-[DU]	20 nindan-DU = (20 x 6 m = 120 m)
7' [...] [...]daḡal	[...] [...]width
8' maš kùš GAM	½ kùš = (½ 50 cm) 25 cm depth
9' 2 sar 5 gín saḫar-ḫi-a	(36 m ³ + 300 litres =) 37.5 m ³ silt
10' 6 nindan-DU	36 m
11' 2 kùš daḡal	2 kùš (= 1 m) width
12' 2 kùš GAM	2 kùš (= 1 m) depth
13' šanabi sar saḫar-ḫi-a	2/3 sar (12 m ³) silt
14' ^{íd} am-ma-ma	Ammama Canal

15' 20 [1] nindan-DU	(21? x 6m) 126 m
16' 2 [kùš] dağal	2 [kùš] = 1 m width
17' 1 maš kùš GAM	1 ½ kùš (= 75 cm) depth
18' 6 sar 15 gín sahar-ḫi-a	(108 m ³ + 25 litres =) 108.015 m ³ silt
19' ^{íd} an-na-bi-um	Annabium Canal
20' 21 [nindan]-DU	126 m
21' [2?] [...] dağal	[2 ?] [...] width
22' 3 [...] GAM	3 [...] depth
23' 7 [maš] [sar] sahar-ḫi-a	7 [maš] [sar] (7.5 x 18 m ³ =) 135 m ³ silt
24' 30 kid lagab	30 short reed (beds)
25' sar	sar
26' 25 nindan-DU	(25 x 6 =) 150 m
27' 2 kùš dağal	(2 x 50 cm =) 1 m width
28' 3 kùš GAM	(3 x 50 cm =) 1.5 m depth
29' 12 maš sar sahar-ḫi-a	225 m ³ silt
30' maš/bán 2 [kùš DU?]	2 []
31' maš/bán 3 [dağal?]	

32' maš 3 GAM	half 3 depth
33' 6 sar [saḥar]-ḥi-a 3 erin-bi [...] erin [URU] 3 erin 24 erin	(6 x 18 =) 108 m ³ , 3 workers , [...] workers,
34' 4 nindan-DU [...]	(4 x 6 =) 24 m
35' 1 kùš daḡal	50 cm width
36' 1 kùš GAM	50 cm depth
37' šanabi sar DU [...] erin-bi 3 erin [URU?] 2 erin 6 erin	2/3 sar [...] 3 workers [] 2 workers, 6 workers
38' 2 bi [...] [...]	

Comments

The location of the irrigation network shown on the map is indicated by the square box joined to the Euphrates, labelled kun-íd-da^{ki}, 'Tail of the River'. Though its modern location is unidentified, this town is mentioned in a letter published by Leemans as part of a collection related to Old Babylonian trade. The letter is from an individual named Itti-Sin-Milki, a member of the *wākil tamkāri* trade department, and details a delivery of goods by him:

118 udu-nita	118 rams
2 (bán) gišlam-tur	2 sūtu of nuts (tuarzu),
2 (bán) gišlam-gal	2 sūtu of pistachio (buṭuttu),
2 (bán) lāl	2 sūtu of honey,
3 (bán) 2 si-la ì-sag	2 sūtu 2 qa of oil of good quality,
5 (bán) šim-hi-a	5 sūtu of mixed aromatics,
11 ma-na gišerin	11 minas of cedar-resin,

mu-DU it-ti- ^d sîn-mil-ki	delivered by Itti-Sîn-milki,
zar-bí-lumki	of Zarbilum;
giš-tag-ga lugalof the king
itu (?) du ₆ -kù	for the month Tešritu
ša i-na kun i ₇ x)-šu	when he (?) came into the basin of
i-la-[ku]	the....šu canal ¹⁹⁰

The last sign in the place name ‘kun-i₇...’ is damaged on the tablet which bears Itti-Sin-Milki’s letter, though Leemans suggest a possible reading of DU or UŠ. Since the letter also omits the KI sign after the name ‘kun i₇ x²’, Leemans identifies the place mentioned here as the ‘basin of the ...šu Canal’. The Schøyen Map, however, confirms that Kunidda was a town situated on a branch of the Euphrates and, according to Itti-Sin-Milki’s letter, one which was significant enough to warrant a royal visit. Furthermore, it appears from this Old Babylonian trade archive that Itti-Sin-Milki was primarily concerned with the area around Larsa, suggesting that Kunnida and the irrigation network shown on the map were located in this region.

The map identifies five major canals by name, in addition to three channels on the lower half of the map which are not identified. The named canals, with one exception, are all identified as *nāru* (íd), referring to a either a natural river or man-made canal.¹⁹¹ The waterway at the top of the map is identified as the Euphrates (íd-ud-kib-nun-na), which feeds the Musahḫirum, the only channel with a name not preceded by the íd determinative. This suggests the term Musahḫirum represents a designation rather than a name, and its reading here is suggested by the verb *sahāru*, ‘to curve, circle, encircle’,¹⁹² a concept clearly suggested by the channel’s path which follows an elongated, circular course, branching from the Euphrates on one side of the map before re-joining it on the other.

¹⁹⁰ AO 8469, translated by Leemans 1960: 78

¹⁹¹ Van Soldt 1988: 111

¹⁹² Cf *sahāru* 3, CAD S p. 37

A caption under the Musahhirum on the left half of the tablet provides the first in a series of dimensions on the map indicating length, width and depth measurements given for a number of the channels on the plan. In each case, the measurements for width and depth are followed by verbal qualifiers (daḡal and GAM respectively). The measurement which precedes these width and depth dimensions is not explicitly identified as 'length', though it is here considered implicit in the context of the measurements provided. These linear measurements are also followed by a volume measurement of silt (saḡar-ḫi-a) which is presumably to be dredged as part of a maintenance programme.

The full series of dimensions for the Musahhirum are not preserved (lines 6-9), though the depth is given as 25 cm, and the volume of silt to be dredged as 37.5 m³. The Dadi Canal emerges from the Euphrates on the upper left hand side of the map and takes a vertical course down the plan before turning right, towards the centre. Its dimensions are not provided, though it joins the Ammama Canal in the centre of the map, at a four-channel intersection.

The Ammama Canal is not only joined to the Dadi Canal, but also the Musahhirum channel, from which it emerges on the upper half of the map. The dimensional labelling becomes unclear at this point; it seems that a caption aligned to the left hand bank of the Ammama Canal (lines 10-13), given as 36 m [length], 1 m width and 1 m depth, along with a volume of 12 m³ silt, must refer to this channel. However, another caption aligned next to the opposite bank of the Ammama Canal also provides a series of dimensions, which are larger than those on the left hand side (lines 15-18): 126 m [length], 1 m width, 75 cm depth and 108.015 m³ silt.

Another set of dimensions is, again, provided for the Ammama Canal, this time written next to the canal's left hand side on its lower section, beyond the central intersection where the Ammama Canal, Dadi Canal and Annabium Canal meet. This final caption for the Ammama Canal (lines 26-29) gives dimensions of 150 m [length], 1 m width, 1.5 m depth and 225 m³ silt. It therefore seems that these three sets of dimensions all refer to the Ammama Canal, though to different parts. Those in lines 10-13 on the left hand side of the canal therefore refer to all or part of the diagonal bend which emerges from the Musahhirum, those on the right to a subsequent section of the Ammama Canal, perhaps as far as the central intersection, and those on the lower half of the map which appear on the left hand side of the canal to its length beyond this intersection.

The channel which joins the Ammama Canal on its right hand side is the Annabium Canal, which follows a horizontal course through the centre of the right half of the map before presumably continuing beyond the tablet's edge. The dimensions given for this waterway in lines 20-23 are difficult to read; the scribe appears to have omitted the 'nindan' sign in the canal's length measurement, and the width and depth measurements are only partially legible. They appear to be 126 m [length], with width of depth measurements of possibly 2 and 3 respectively. The unit of measurement given for the width and depth measurements is barely legible in this caption, though the 'kùš' (50 cm cubit) seems likely, since all the other width and depth measurements on the map are expressed in this unit. The volume of silt appears to be 135 m³ (7 ½ sar) though, again, the unit of measurement is difficult to decipher here.

Four squares are also joined to the edges of the Annabium canal, two small adjacent squares on its lower side and two nested squares on its upper side. It is not completely clear what these squares represent, since only the larger of the nested squares on the upper side is labelled, with the caption 30 kid lagab, '30 short reed (beds)', indicating the presence of a marshy area from which reeds were cut.

The longer caption inscribed on the lower right hand side of the plan (lines 30-38) is partially damaged due to some surface erosion to the tablet, though it appears that these notes are concerned with calculating the number of workers (erín) needed for the project. There are a number of references to linear measurements, including widths (lines 31, 35) and depths (lines 32, 36), and what may be a reference to a volume of silt in line 33. In this case, the sign IŠ (saḥar – silt) is broken, though since the space where the missing sign should be is preceded by a total in 'sar' (the unit of measurement used to express silt volumes in all the other captions on the plan), and is followed by the signs 'hi.a' (indicating the plural), it seems likely that this line originally contained a reference to a volume of silt.

Frustratingly, the tasks or sections of the canals which the workers mentioned here are related to are not explicitly stated. It seems that the scribe had recorded how many workers or groups of workers were needed according to specific calculations, which are difficult to follow in the format presented by the scribe. It is known from a small number of Babylonian mathematical problem texts, however, that the number of workers needed for canal excavation projects were frequently calculated after assessing the sizes of canals and the volume of earth and silts which were to be removed.

These problem texts appear to have been based on mathematical paradigms, though it is assumed that they are representative of real irrigation channels.¹⁹³ The problems in these texts generally refer either to dredging or expanding canals, and provide a number of details including canal dimensions, the volume of silt to be removed, the amount of workers engaged on the project and their wages. The problems change the combination of these variables, and then ask for the missing information based on those provided. One problem text, for example, asks for the depth and width of a branch canal, which the reader calculates from the number of workers and volumes of earth and water provided by the text.¹⁹⁴

Another text contains twenty three problems all concerned with the excavation of earth from a canal, again asking for different parameters to be found based on a set of given variables, including linear dimensions and volumes, the volume of earth one worker can remove in a day, the number of workers needed to excavate the canal, the wages for one worker for a single day (in barley or silver) and the length of time needed for the total project.¹⁹⁵ These texts suggest that such details were calculated at the outset of a new dredging programme, and it appears that our map is a real-life example of the notes made by an engineer in order to administer the operation. Unfortunately the notes made by the scribe on our map are, unsurprisingly, not as clear as the information provided in the mathematical texts, particularly in relation to the assigned tasks given to the workers mentioned. The Schøyen Map confirms, however, that the problem texts are representative of the approach taken by those in charge of dredging projects.

These mathematical problem texts also raise another issue with the Schøyen Canal Map, that of the dimensions given for the canals. The channels mentioned in the problem texts are all described as ‘pa₅.sig (*atappu*)’, or subsidiary canals. These channels range in size from 1800 to 2600 m in length, with widths of 1 to 1.5 m and depths of 0.5 to 2.25 m. One problem text, for example, concerns a subsidiary canal which is 1800 m long, 1 m wide and 0.5 m deep, and the reader is asked to find the area, volume of earth, number of workers and total expenditure of wages.¹⁹⁶ The widths and depths given in these texts are thus similar to those given on our map, which range from 25 cm to 1.5 m in depth, with all preserved widths given as 1 m.

¹⁹³ Powell 1988: 163

¹⁹⁴ TMS, Text 25, 1 (Nemet-Nejat 1993: 37)

¹⁹⁵ YBC 4666 (Nemet-Nejat 1993: 39-40)

¹⁹⁶ Powell 1988: 163

The canal lengths, however, differ significantly, since those on our map are between 36 m and 150 m. Yet it is also clear that these measurements do not refer to the entire length of each canal but rather sections of them, since the Ammama Canal is inscribed with three measurement captions which appear to refer to different parts of its length, the shortest of which is 36 m, while the others are given as 126 m and 150 m. It must therefore be assumed that none of the length measurements given in the captions on the map refer to total canal lengths, but rather the specific section which was to be dredged. This would also explain why none of the length measurements on the map are followed by a verbal qualifier explicitly stating that they are ‘lengths’, unlike the width and depth measurements noted by the scribe. Furthermore, since he appended each width and depth dimension with the words *dağal* and *GAM*, it can be assumed that these dimensions represent the complete width and depth of each canal.

Although these width and depth dimensions all appear to roughly match those given for the canals in the mathematical texts, the names of the channels on the map are all, with the exception of the *Musahhirum*, preceded by the determinative ‘*íd*’ indicating they are primary irrigation channels, while the canals in the mathematical texts are all described as subsidiary waterways. The general dimensions of canals are not generally described in administrative texts related to irrigation networks, and even the well-documented Old Babylonian archive which details the administration of the irrigation system in Larsa, the area possibly shown on the map, makes few references to canal sizes.¹⁹⁷ It therefore seems that primary canals only differed significantly from their subsidiary channels in length, but not necessarily width or depth.

The Reverse of the Tablet

The tablet’s reverse is less well-preserved than the obverse, though it is possible to decipher a fragmentary column of numbers on the left hand side of the tablet (reverse 1-18), the remains of a thirty day calendar on the right hand side (22-36), and a partially-preserved colophon at the bottom of the tablet (39-41):

¹⁹⁷ See S. D. Walters. 1977. *Water for Larsa: An Old Babylonian Archive Dealing With Irrigation*

- 1' [...] [...] [giš]
- 2' [30] [...] [giš]
- 3' [30?] [...] [giš]
- 4' 20 [...] [...]
- 5' [...] [...] [giš?]
- 6' kúr? [...] [giš?]
- 7' kúr? [...] [giš?]
- 8' [...] [...] [giš?]
- 9' [...] [...] [giš?]
- 10' [10?] [...] [giš?]
- 11' [10?] [...] [giš]
- 12' [...] [...] giš
- 13' [10?] [...] sar
- 14' [10?] [...] sar
- 15' [10?] [...] [...]
- 16' [20?] [...] [...]
- 17' 30 [...] [...]
- 18' [...] [...]

- 19' [...]

- 20' [6]
- 21' [6]

22' ʔ1ʔ[maš]

23' [...]

24' [...]

25' [...]

26' [...]

27' [...] 21 [kam]

21st [day]

28' ʔudʔ [22] [kam]

[22nd] ʔdayʔ

29' [ud] [23] [kam]

[23rd] [day]

30' [ud] [2]4 kam

[2]4th [day]

31' [ud] 25 kam

25th [day]

32' ʔudʔ 26 ʔkamʔ

26th ʔdayʔ

33' ud 27 [kam]

27th day

34' ud 28 [kam]

28th day

35' ʔ3ʔ erin-ʔhiʔ-[a] [ud] [29] [kam] ʔ3ʔ ʔerinʔ [...]

ʔ3ʔworkers...[29thday]...ʔ3ʔ
ʔworkersʔ

36' ʔ10ʔ [erin-ʔhi-a] ʔudʔ [30] [kam] [erin-ʔhi-a i [...]

ʔ10ʔ[workers]...[30th
ʔdayʔ...[work]ers [...]

37' [...] [iti] ne ud 23 kam

[month of] Abu 23rd day

38' am-mi ʔdiʔ-[ta]-[na]

Ammi-ʔdiʔ-[tana]

39' [lugal ka-dingir-ra] ud [...]

[King of Babylon], the [...] day of
[...]

Comments

As mentioned above, the column on the left hand side of the reverse (lines 1-19) is poorly preserved, though a series of numbers can be read at the beginning of most of these lines. The signs at the end of each line are generally unclear; a ‘GIŠ’ sign is visible in lines 11 and 12, though without the fuller context provided by the missing signs it is unclear how this should be translated. A ‘SAR’ sign appears at the end of lines 13 and 14, suggesting that at least parts of this list may be concerned with area or volume measurements. This column may also correspond to the column on the right hand side of the tablet’s reverse, which provides a 30 day calendar.

Much of this calendar is now missing, though the sequence of consecutive days can be clearly followed between lines 30 to 34, which run between days 24 and 28. It is assumed here that lines 35 and 36 finish this sequence, though in these lines the captions ‘ud 29 kam’ and ‘ud 30 kam’ appear to follow other phrases related to numbers of workmen. Finally, a colophon at the bottom of the reverse dates the tablet to the 23rd day of the month of Abu, the fifth month in the Babylonian calendar which fell in July/August. The name of the year in which the map was made is no longer preserved, though it is given as sometime during the reign of Ammi-ditana.¹⁹⁸

Though it appears to have been drawn free-handed, the graphic elements of the map are well-executed and clearly presented. It is unclear whether the scribe used a fine-tipped instrument to incise the canal lines on the map, since some of them are clearly thicker than others, most obviously on the Musahhirum, where the lines on this channel’s upper and lower sides are of significantly different thicknesses (see plate II). The end of each set of parallel canal lines is clearly finished off with wedge, however, which suggests the scribe at least used a writing stylus to ‘close’ the end of each canal. A similar technique is found on a number of building plans,¹⁹⁹ where scribes used fine lines to represent walls, and then often indicated the presence of doorways with short double-wedges incised with the tip of a writing stylus.

Since it is clear that the length dimensions given for the canals on the map do not refer to the whole lengths of each channel, it is difficult to assess the relationship between the canals on the map in terms of scale. The width measurements which are preserved indicate that the

¹⁹⁸ Though the king’s full name is not preserved, the third sign in the name sequence is almost certainly a DI, and since only two kings bear names which begin with the element ‘ammi’ (Ammi-ditana and his successor Ammi-saduqa), it can be assumed that the former is referenced in this colophon.

¹⁹⁹ For building plans see chapter four, especially pp. 150-154

many of the canals are all of the same width, as they are presented on the map. The Euphrates and Musahhirum are visibly wider, though their width measurements were not included by the scribe and it is therefore conceivable that they were in fact wider than the other channels shown on the map. The Musahhirum also appears to have an unusual ‘bulge’ in its course, roughly halfway across its length, the presence of which suggests the scribe intended to present a realistic illustration of its course and physical qualities. The map does not, therefore, render the waterways in a completely uniform manner, and it can be assumed that this drawing was designed to show roughly the real courses and relationships between the primary canals in this irrigation system.

It must be once again noted, however, that the map does not provide a complete survey of this irrigation network, since it omits the many subsidiary canals and irrigation ditches which would have been fed by the waterways identified on the map. Indeed, since there are no measurements given on the plan which might indicate the size of the area shown, we do not know how large a region this irrigation network served. As mentioned above, it appears from scattered documents and reconstructed archives related to irrigation that canal networks were generally maintained through local administration.²⁰⁰ It is therefore possibly that Kunidda is identified on the map not only in order to localise the area shown, but also since this was the administrative centre responsible for maintaining the irrigation system shown here.

A study of an Old Babylonian irrigation archive from Larsa reveals much about the administration of such canal networks, and the roles undertaken by certain officials in planning and maintenance projects. The archive contains one hundred and fifty two documents covering a period of twenty one years, between 1898 and 1877, and is primarily concerned with the numbers of workers needed for various projects, in addition to their wages and total costs.²⁰¹ According to Walters’ reconstruction of the archive, the canals and rivers of the Larsa region were administered by what he refers to as an ‘Irrigation Bureau’ with a hierarchical structure consisting of a ‘Head of the Bureau’, who oversaw a ‘Canal Inspector’ in addition to a number of scribes and archivists.²⁰²

The ‘Canal Inspector’, a role which appears to have been undertaken by an individual named Išar-kubi during the period covered by the archive, is mentioned in a number of letters

²⁰⁰ Postgate 1996: 178-179

²⁰¹ The archive was purchased in the 1920s by A. T. Clay and is now housed in the Yale Babylonian Collection (Walters 1970: xx).

²⁰² Walters 1970: 144-145. Note that Walter’s terminology for the ‘Irrigation Bureau’, ‘Head of the Bureau’ and ‘Canal Inspector’ are all inferred from the archive, rather than translations of Akkadian terms.

concerned with calculating labour and costs. In a letter between members of the ‘Bureau’ Nur-Sin and Lu-igisa, for example, Išar-kubi is quoted as informing Lu-igisa how many labourers are required for emergency work on the Nubitar Canal: *um-ma šu-ma* 1800 *lú-ḥun-gá re-eš-ka li-ki-lu*, “Hire 1800 workers to take care of you.”²⁰³ The archive suggests that Išar-kubi’s role within the ‘Irrigation Bureau’ was to survey new projects, including calculating labour and costs, and to inspect the work as it was carried out.²⁰⁴

The means by which Išar-kubi undertook these surveys and made his initial estimates is unknown, though it seems that a similar role was fulfilled by the author of our map, which is primarily concerned with assessing how much silt was to be dredged from each canal and the number of labourers needed to carry out this task. Whether maps were regularly made for such purposes, however, and whether they were archived to be re-used or later consulted, remains unknown. Ultimately, as the earliest extant map made by an ‘irrigation inspector’, it is clear that the Schøyen Canal Map is not just of interest in the context of Near Eastern cartography, but has wider implications for our understanding of irrigation and its administration in antiquity.

²⁰³ NBC 5488, lines 9-11, translated by Walters 1970: 34-35 (Text 30)

²⁰⁴ Walters 1970: 145

THE NIPPUR FIELD AND CANAL NETWORK MAP

A well-preserved Kassite period map dated to c. 1500 shows the complex irrigation network around the Nippur area, noting some of the canals, towns and agricultural estates of the region (fig. 35).²⁰⁵ The waterways are indicated by parallel lines identified with written labels, while the names of fields are inscribed directly onto the spaces between these canals, which form their borders. A number of towns and an 'estate' are also noted on the map using circles, a technique known from two Old Akkadian field plans, the Old Akkadian Gasur map and the Babylonian Map of the World.²⁰⁶

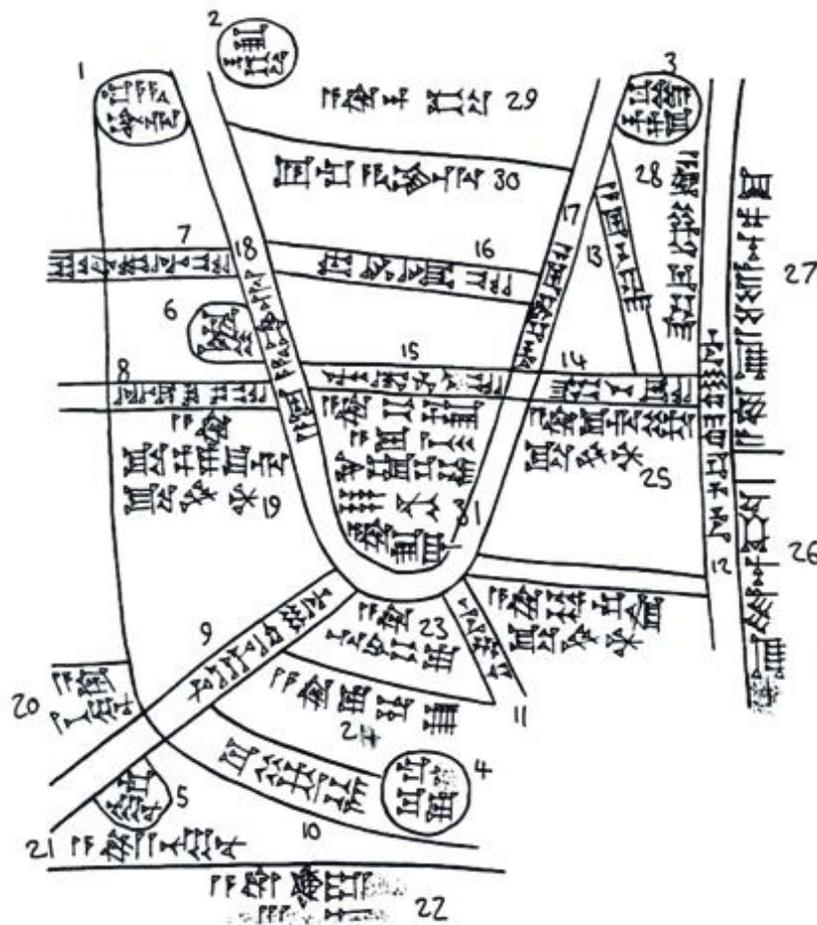


Fig. 35. A Kassite period map showing the irrigation system of the Nippur region

²⁰⁵ University Museum Pennsylvania CBS 13885; clay; 7.5 x 11 x 2.5 cm. Provenance: Nippur, findspot unknown.

²⁰⁶ For the Old Akkadian field plans see chapter two, for the Gasur map see pp. 223-229 and for the Babylonian Map of the World see pp. 235-248

The captions on the map are translated as follows:

1' <i>ālu</i> (URU) <i>ḥa-am-ri</i>	Ḥamri Town
2' <i>bīt</i> (ĜÁ) <i>marduk</i> (^d AMAR.UTU)	Marduk Estate
3' <i>ālu</i> (URU) <i>kar-nusku</i> (^d PA.TÚG)	Kar-Nusku Town
4' <i>ālu</i> (URU) <i>ba-lu</i>	Balu Town
5' <i>ālu</i> (URU) <i>qat₇-nu</i>	Qatnu Town
6' <i>tīl</i> (DU ₆) <i>awīlu</i> (LÚ) <i>ninnu</i>	Hill of the Fifty Men
7' <i>a-tap ḥu-un-[gur₈?]-i</i>	Ḥun[gur]i irrigation ditch
8' <i>a-tap pa-áš-šu-ri</i>	Paššuri irrigation ditch
9' <i>nam-gar bēl-šú-nu</i>	Bēlšunu irrigation canal
10' <i>ba-li-tum</i>	Balitum
11' <i>nam-gar [...]</i>	[...] irrigation canal
12' <i>nam-gar bur-rim-maš-ḥu</i>	Burimmašḥu irrigation canal
13' ^{íd} <i>bad-tum</i>	Badtum Canal
14' ^{íd} <i>bad-tum</i>	Badtum Canal
15' <i>a-tap [...]-kur-ru-ti</i>	[...]-kurruti irrigation ditch
16' <i>a-tap ša-te-e</i>	The 'water access' irrigation ditch
17' ^{íd} <i>bīl-ti</i>	Bilti Canal
18' ^{íd} <i>ḥa-am-ri</i>	Ḥamri Canal
19' A.ŠÀ <i>pa-áš-šu-ri bārû</i> (ŠA.LÚ.ḤAL)	Field of the table of the extispicy priest

20' A.ŠÀ <i>qat7-nu</i>	Qatnu Field
21' A.ŠÀ <i>qat7-nu</i>	Qatnu Field
22' A.ŠÀ <i>ḥar-¹ia¹</i> [...] [...]	Ḥaria[...] Field
23' A.ŠÀ <i>mud-bi-lu</i>	Mudbilu Field
24' A.ŠÀ <i>lu-du-ú</i>	Ludû field
24' A.ŠÀ <i>bāb ālu</i> (KÁ.URU) <i>bārû</i> (ŠA.LÚ.ḤAL)	City Gate Field of the extispicy priest
25' A.ŠÀ <i>ku-ri-li bārû</i> (ŠA.LÚ.ḤAL)	Kuruli Field of the extispicy priest
26' [A.ŠÀ] <i>bīt nadin-marduk</i> (SUM ^d AMAR.UTU)	Field of the Nadin-Marduk Estate
27' A.ŠÀ <i>bīt kar-nusku</i> (^d PA.TÚG)	Field of the Kar-Nusku Estate
28' A.ŠÀ <i>la-ma-tum</i>	Lamatum Field
29' A.ŠÀ <i>marduk</i> (^d AMAR.UTU)	Marduk Field
30' <i>appāru</i> (AMBAR) <i>ālu ḥa-am-ri</i>	Reed marsh of Ḥamri Town
31' A.ŠÀ <i>bi-rit</i> ÍD. MEŠ	Field between the rivers
[...]	[...]
8 gul A.ŠÀ É.GAL	8 gul field of the palace

Four circles on the map are used to indicate towns, denoted by the term *ālu* (URU), including Ḥamri in the upper left hand corner of the map, Kar-Nusku in the upper right hand corner, Mudbalu in the centre of the lower edge of the map and Qatnu in the lower left hand corner. A circle is also used to indicate a place referred to as ‘The Hill of Fifty Men’ (*tīlu* (DU₆) *awīlu* (LÚ) *ninnu*), which Langdon identifies as another town,²⁰⁷ presumably since the scribe used the same graphic symbol to identify all these features. Since the name *tīl awīlu ninnu* is not preceded by the term *ālu*, however, it cannot be positively identified as a city.

²⁰⁷ Langdon 1916: 263

Another circle to the right of Ḥamri Town shows the ‘Marduk Estate’, indicated by the term *bīt* (ĜÁ). This word encompasses a number of different meanings, however, ranging from ‘house’ or ‘estate’ to a specific kin or social group,²⁰⁸ and its nuance is therefore dependent on context. In this case, there is no written context which might indicate the most appropriate translation of the term, since the medium of the map is primarily graphic. The circles used to indicate the towns, the ‘Hill of the Fifty Men’ and the Marduk Estate on the map are all essentially the same; though they differ slightly in size, this appears to be the result of the scribe writing the name of the town or estate and then drawing the circle around it. This difference in scale is therefore due to the length of the name, and these circles offer no graphic distinction which might indicate the difference between the encircled features shown.

A number of agricultural holdings are noted on the map with the term A.ŠÀ, ‘field’. The A.ŠÀ *marduk* (^dAMAR.UTU) ‘Field of Marduk’ is located on the centre of the upper edge of the map, separated by a single line boundary from the ‘Reed marsh of the City of Ḥamri’ (*appāru ālu ḥa-am-ri*). This type of single demarcating line is familiar from numerous field plans,²⁰⁹ and may well indicate a hypothetical border rather than a physical feature. The field to the right of the reed marsh and to the left of the Field of the Kar-nusku Estate is inscribed with the label ‘Field of Lamatum’ (A.ŠÀ *la-ma-tum*), and immediately beneath it lies the ‘Kurili Field of the Extispicy Priest’ (A.ŠÀ *ku-ri-li bārû*). The term *ku-ri-li* is related to shocks or piles of sheaves,²¹⁰ indicating that this field was used to grow cereal crops.

Beneath this field is the ‘City Gate Field of the Extispicy Priest’ A.ŠÀ *bāb ālu* (KÁ.URU) *bārû* (ŠA.LÚ.ḤAL), though it is unclear from the map which ‘city gate’ this field is associated with. Immediately to the left of the ‘Field of the City Gate’ is the ‘Field of Mudbilu’ (A.ŠÀ *mud-bi-lu*) which, like the ‘Field of Marduk’ and the reed marsh of Ḥamri on the upper half of the map, is separated by a single-line boundary from the ‘Ludû Field’, the name of which indicates an administrative designation, probably identifying an agricultural unit in which specific work obligations were carried out.²¹¹

To the upper left of these fields is the ‘Field of the Table of the Extispicy Priest’ (A.ŠÀ [ŠU])

²⁰⁸ Brinkman 2004: 286

²⁰⁹ See chapter two for field plans.

²¹⁰ Cf. ‘*kurullu*’ (A), CAD K, p. 572

²¹¹ Contrary to Langdon’s (1916: 267) suggestion that this field may have been filled with pits or mud brick quarries. Cf. ‘*ludû*’, CAD L, p. 238.

pa-áš-šu-ri bārû (ŠA.LÚ.ḪAL), presumably a field from which the produce was allocated to the extispicy priests, which is located directly opposite the ‘Kurili Field of the Extispicy Priest’ (A.ŠÀ ku-ri-li bārû (ŠU.LÚ.ḪAL) on the other side of the central canal curve. The Town of Qatnu on the lower left hand corner of the map is bordered on each side by a ‘Field of Qatnu’ (A.ŠÀ qat₇-nu). The name of a field is also inscribed on the lower edge of the tablet, the A.ŠÀ ḫar-[ia]-[...] [...]. The field in the centre of the map, located to the interior of the canal curve, is described as ‘The field between the rivers, [...] 8 gul, the field of the palace’ (A.ŠÀ bi-rit ÍD.MEŠ, [...] 8 gul A.ŠÀ É.GAL). Langdon takes the ‘8 gul’ as an indication of the area of the field,²¹² though no such unit is attested in the ancient Near East.²¹³

As mentioned above, four of the fields on the map are separated by single lines which, like those commonly found on field plans, are likely to represent hypothetical boundaries rather than topographic features. The other fields on the map, however, are separated by waterways identified with captions inscribed between their parallel lines. These canals are all roughly the same width on the map, yet the determinatives which precede their names indicate that they are different *types* of irrigation channel which would have been considerably different in size. Therefore, their graphic representation is only used to show their relative positions on their map, while the description of their physical qualities relies on the use of written terminology.

Four channels are identified on the map as *nāru* ‘river’ or ‘canal’ by the determinative ‘íd’; the ^{íd}Ḫamri, the ^{íd}Bilti and the ^{íd}Badtum, which appears to consist of two branches arranged at near right angles. The term *nāru* can be used to describe either a river or canal, though these are always primary waterways which feed secondary channels and are likely to have been navigable by boat during the Kassite period, thus creating transport arteries in the irrigation system.²¹⁴ The large curved waterway which runs from the upper left hand corner to the upper right hand corner of the map is thus formed from two primary waterways, the ^{íd}Ḫamri, on which the town of Ḫamri stands, and the ^{íd}Bilti, which Langdon translates as ‘Canal of the Burden’, from *biltum*, ‘load, talent, tribute’.²¹⁵

The third primary waterway, the ^{íd}Badtum, branches from the ^{íd}Bilti and borders the ‘Lamatum Field’ on the upper right hand side of the map. The ^{íd}Badtum is connected to

²¹² Langdon 1916: 265

²¹³ See appendix II for units of measurement.

²¹⁴ Van Soldt 1988: 111

²¹⁵ Langdon 1916: 263, though Finkelstein (1962: 81 note 5) translates this name as *Eššuti* (BÍL^{ti}), ‘New Canal’.

another channel at an almost 90° angle which runs horizontally across the centre of the map, labelled with the same name, ^{id}Badtum. The arrangement of these canals is unclear; since they share the same name it would be logical to assume that the lower branch of the ^{id}Badtum is simply a continuation of the waterway which branches from the ^{id}Bilti, changing course beneath the Lamatum field. They are presented as two distinct channels on the map, however, both of which are fed from the ^{id}Badtum.

The lower, horizontal branch of the ^{id}Badtum appears to supply the channel which runs almost the full length of the right hand side of the map, the ‘Namgar Burrimmašhu’. The term *nam-gar* (*namkaru*) indicates an irrigation canal which branched from a *nāru*, though it is unclear whether they were also navigable.²¹⁶ In addition to the Namgar Burrimmašhu, a further two channels are labelled ‘namgar’ on the map; the ‘Namgar Bēšunu’, which branches from the ^{id}Ḥamri towards the lower left hand corner of the map towards Qatnu Town, and another which branches from the ^{id}Bilti towards the lower right hand corner of the map, though the tablet is broken here and the name of this waterway is not preserved.

The remaining four channels on the map are identified as ‘*a-tap*’ (*atappu*), a type of small boundary ditch which, as suggested by the map, appears to have been used to separate fields.²¹⁷ The same type of boundary ditch appears on an Old Akkadian field plan, discussed above,²¹⁸ though in that case ditch is described using the synonym ‘*pa₅*’.²¹⁹ Two more of these irrigation ditches appear on the upper left hand corner of the map, the *a-tap hu-un-[gur₈?]-i* and, directly beneath it, the *a-tap pa-áš-šu-ri*, which borders the ‘Field of the Table of the Extispicy Priest’ A.ŠÀ [ŠA] *pa-áš-šu-ri bārû* (ŠA.LÚ.ḪAL).

Another irrigation ditch, the *a-tap [...]-kur-ru-ti*, forms the upper boundary of the central ‘Field of the Palace’, with the *a-tap ša-te-e* located directly above it. The only uninscribed channel on the map appears on the lower right hand side, where a pair of parallel lines joins the ^{id}Bilti to the Namgar Burrimmašhu. Another pair of parallel lines appears on the lower edge of the map, joining the Namgar Bēšunu to the Town of Balu. These lines do not appear

²¹⁶ Van Soldt 1988: 112

²¹⁷ Van Soldt 1988: 113

²¹⁸ AO 3390 (fig. 22)

²¹⁹ In Old Babylonian mathematical texts, for example, the term *atappu* is frequently equated with *pa₅/sig* (Walters 1970: 16).

to represent part of the irrigation system, however, and are simply inscribed with the word *balitum*, indicating a ‘desert’ or ‘wasteland’.²²⁰

As mentioned above, the map employs a number of techniques and cartographic symbols found on many other examples from the ancient Near East, such as the double-line waterways and circles used to indicate towns and estates. These graphic symbols only serve to identify the relative locations of features, however, and the map relies heavily on the use of written labels to further describe the type of feature shown. There is no difference, for example, between the circles used to identify towns or ‘estates’, which the scribe appears to have drawn after their names were written.

The irrigation channels shown are all of the same width, even though some of are designated *nāru*, primary rivers or canals which are likely to have been navigable, while others are described as *a-tap*, which are known to have been smaller irrigation ditches. Though all these terms are well-attested in Kassite documentation related to irrigation, the size of each type of waterway is rarely mentioned, and their typical dimensions are therefore difficult to reconstruct. Rather, the fact that they were of different dimensions is implicit in their functions; it can be assumed, for example, that a primary waterway which was navigable by boat and fed smaller irrigation arteries would have been considerably larger than a ditch which separated fields. It is therefore highly unlikely that the canals discussed here were, in reality, of the uniform width they are presented as on the map.

The map clearly shows the relative locations of a number of different geographic features, though with few comparable examples of this type of plan, its purpose is not entirely clear. Although the map includes a number of agricultural plots, it cannot be categorised as part of the Near Eastern field plan corpus since, at their most basic, field plans always include the dimensions of the plots shown. Langdon²²¹ suggests the focus of the map is the central field, the ‘Field of the Palace’, since it occupies the most central position on the map and is the only quantified piece of land. Since the term ‘gul’ is unknown as a unit of measurement in the ancient Near East, however, it is unclear what the caption in this field refers to.

If this field is the focus of the map, it is primarily contextualised by its proximity to two major waterways, which is evident in its description as ‘the field between the canals’ (A.ŠÀ *bi-rit* ÍD.MEŠ). Furthermore, the region’s irrigation network is itself geographically

²²⁰ Cf. ‘*balitu*’, *CAD B*, p. 63

²²¹ Langdon 1916: 265

contextualised by the locations of the various towns and estates of the area, which are located on these primary waterways. It therefore seems likely that the purpose of the map is to show the entire arrangement of the irrigation network, though it was perhaps ‘centred’ on the royal estate if the plan was commissioned by the palace.

The map itself is well-executed and, though drawn free-handed, it displays none of the ‘sketchy’ qualities of plans drawn on-site, such as mistakes or erasures, suggesting that plan was perhaps a ‘final version’ drawn using a series of initial surveys. Though nothing is known of the tablet’s findspot it therefore seems likely that it was preserved as a permanent record, perhaps accompanied by a written document which contained further details of its context and purpose, much like the Late Babylonian property plan corpus.²²²

A curious aspect of the writing on the plan also reveals something about the map-making techniques used by the scribe, since the captions on the waterways located on the centre and left hand side of the map are inverted, revealing the order in which the scribe labelled each element. He appears to have drawn the canals and irrigation ditches first, before rotating the tablet in order to inscribe the name of each channel, so that the map was upside down when he came to label the horizontal canals and ditches, the lower branch of the ^{íd}Badtum, the *a-tap [...] -kur-ru-ti*, the *a-tap pa-áš-šu-ri*, the *a-tap hu-un-[gur₈?]-i* and the *a-tap ša-te-e*. From a cartographic perspective, there is no reason for these labels to be inverted; in fact, it makes them more difficult for the viewer to read. It does, however, reveal the technique used by the scribe, and the methodical approach taken in creating such a complex map.

²²² See pp. 69-74

A FRAGMENT OF A PLAN SHOWING THE WATERWAYS AROUND SIPPAR

Although often referred to as a ‘city plan’,²²³ this small fragment in the British Museum can be more accurately described as a map showing the rivers and canals around the city of Sippar, located on the Euphrates around 60 km north of Babylon (fig. 36).²²⁴ The fragment shows a small square labelled UD.KIB.NUN^{ki} ‘Sippar’, bordered on its upper and lower sides by two water courses represented by simple parallel lines. The partially preserved label on the watercourse skirting the upper edge of the tablet reads ^{id}UD.KIB.NUN, ‘Euphrates’, crossed by a small rectangle which presumably marks the location of a bridge.

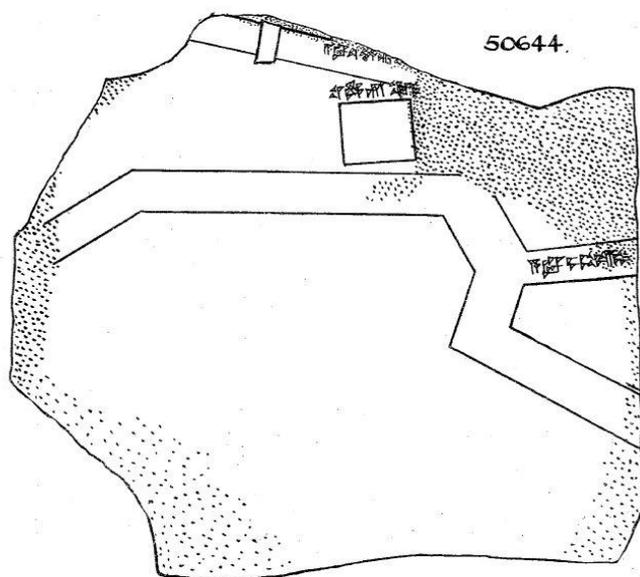


Fig. 36. Fragment of a plan showing the city of Sippar and its surroundings

The lower waterway which enters from the left of the fragment and changes course twice before branching in different directions is labelled ^{id}*tap-pí-iš-tum*, which can be translated as ‘(extension) of a bed of a river’²²⁵ or ‘spillway’.²²⁶

²²³ See for example King & Campbell Thompson (CT XXII)

²²⁴ British Museum BM 50644; clay; 8.4 x 8.9 cm; Late Babylonian. Provenance: Dilbat, exact findspot unknown.

²²⁵ Gasche & de Meyer 1980: 6

²²⁶ Cf. ‘*tappištu*’ A, CAD T p. 184

From the evidence provided by the map, admittedly limited by its fragmentary state, it seems that the scribe was primarily concerned with the relationships between the waterways around Sippar. It cannot be compared to the plans which describe urban layouts, such as the Nippur, Tuba or ‘Babylon’ examples,²²⁷ since it details nothing of the internal layout of Sippar. Furthermore, there is also no indication that the plan is concerned with the survey or division of agricultural space, as seen on the field and agricultural estate plans which also show the presence of waterways. In the case of these estate plans, when rivers and canals are included it is to indicate their relationship with the agricultural plots shown, as part of a full survey of the land which is also noted with border and area measurements.²²⁸

While only a small portion of the Euphrates is preserved at the upper edge of the tablet, we can note that the scribe was careful to draw the course taken by the *tappištum* beneath the city. According to the map, the *tappištum* is slightly wider than the Euphrates, though whether this is an accurate representation of the true scale of these rivers or rather a reflection of the scribe’s concern with the lower of the two is unclear. The term *tappištum*, derived from the verb *napāšum*, ‘to widen’ is rarely attested, and does not appear in connection to Sippar in any other source. The few attestations of the term, though uncertain, are thought to relate to spillways; a text from Mari, for example, contains a passage which mentions the repair of a dam:

*ina panītim inūma Ḥabūr imlām aššum ta-ap-pí-iš-7-tim ša Ḥabūr irritam
labīrtam ina qātamma ušēšir*

“in the past, when the Habur river filled (with flood water), regarding the spillway (?), of the Habur I myself repaired the old reed dam.”²²⁹

Another text directly links the idea of a canal with a spillway, which we can assume would be built in order to manage the canal’s overflow:

²²⁷ See chapter five for city plans.

²²⁸ See chapter two for a survey of estate plans.

²²⁹ ARM 14 (1974) 18: 6, translated by Birot.

pí-x...petûm ÍD tap-pí-iš-tam šuršûm

[PN was ordered] to open the [...] (and) to provide the canal with a spillway²³⁰

It is known that Sippar was surrounded by a dam and located between two waterways, as shown on the map, and it has been noted that the locations of these in relation to the site of Sippar correspond to the presence of natural levees, identified through systematic geological and geomorphologic surveys of the region.²³¹ These studies have shown that the northern Akkad landscape is characterised by levees formed through the seasonal flooding of canals and rivers, after which sediments are deposited beyond their banks. The gradual accumulation of these deposits eventually forms a relief, carrying the river to a higher level than the plain, often making irrigation more effective.²³²

The texts quoted above, however, suggest that regular flooding could be combated through the use of spillways, where excess water was siphoned from the main river or canal through an additional channel. In this case, the section of the lower river labelled ^{id}*tap-pí-iš-tum* might refer only to the smaller branch of the waterway, which acted as a spillway for the larger, meandering section. Despite the use of the ÍD determinative, the word *tap-pí-iš-tum* does not necessarily indicate a proper name, and its use here should perhaps be interpreted rather as the designation of a ‘spillway’ for the main branch of the watercourse to which it is attached, the name of which is not preserved on our map.

Though the fragmentary nature of the plan prevents a conclusive interpretation of its purpose, it is unlikely to have been used as a navigational tool, as suggested by Gasche and de Meyer,²³³ since this study shows there is no evidence that maps ever fulfilled this purpose in the ancient Near East.²³⁴ As already discussed, the plan appears to be concerned with the locations of waterways around Sippar, though whether it was used for planning new branches for the region’s irrigation network, or was drawn to plot the locations of rivers and canals for some other reason, cannot be deduced from the fragment.

²³⁰ Cf. ‘*tappištu*’ A, CAD T p. 184

²³¹ Gasche & de Meyer 1980: 7

²³² Gasche & de Meyer 1980: 3

²³³ 1980: 6

²³⁴ This topic is discussed more fully on pp. 249-252.

THE ARAHTUM CANAL FRAGMENT

The most fragmentary tablet in the canals and waterways collection shows a channel identified as the ^{id}*a-ra-aḥ-tum*, the ‘Arahtum Canal’, the name for the western branch of the Euphrates River.²³⁵ The fragment was originally housed in the collections of the Vorderasiatisches Museum in Berlin and was published by Borchardt in 1888, who mistakenly joined the piece to three fragments of a Neo-Babylonian house plan, discussed below.²³⁶ A photograph of the fragment survives, however, in addition to a line drawing by Unger (fig. 37), which shows a well-executed schematic map drawn with extremely fine, straight lines.

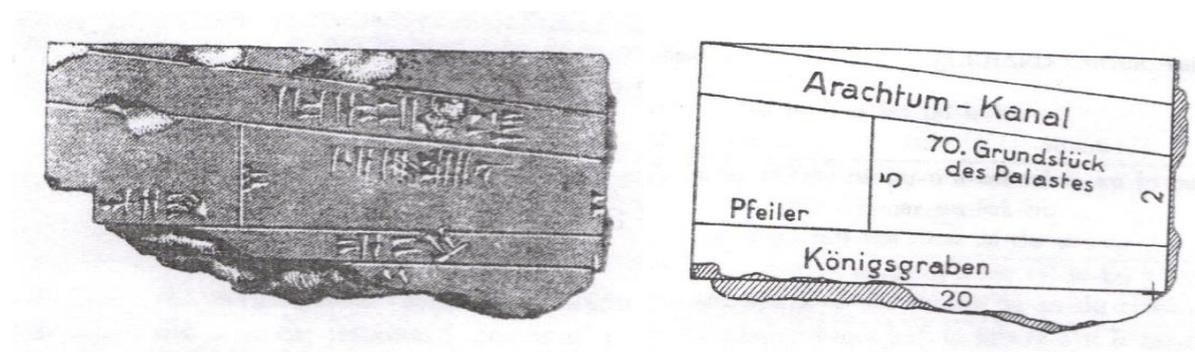


Fig. 37. Photograph and line drawing of a plan fragment showing the Arahtum Canal

The Arahtum Canal is indicated by a pair of straight parallel lines inscribed with the caption ^{id}*a-ra-aḥ-tum*, which borders an area divided by a single boundary line. The left hand portion of this area contains a caption which reads ‘bastion’. The area on the right hand side of this boundary line provides an area measurement: 70 a-ša é, ‘70 is the area of the estate’, while the number 5 aligned to the left hand border and 2 to the right presumably indicate perimeter lengths, though no unit of measurement is included. Another waterway is indicated by a pair

²³⁵ Originally in the collections of the Vorderasiatisches Museum, Berlin, and now lost. Catalogue number, dimensions and provenance unknown.

²³⁶ Borchardt *SPAW* (1888: 129-131)

of parallel lines immediately beneath the central estate, marked *iki* (e) *lugal*,²³⁷ ‘King’s Ditch’. The number 20 is visible below this channel, at the edge of the tablet break.

In his analysis of the piece, Unger identified the fragment as a map of Babylon and the central tract of land as a royal estate,²³⁸ though this is not explicitly stated in the caption. Unger also identified the ‘King’s Ditch’ with the Libil-ḫengalla Canal, a waterway of Babylon known from the cylinder inscription of Nebuchadnezzar II, which describes its construction. Since this channel did not run parallel to the Araḫtu Canal, however, the ‘King’s Ditch’ of the map cannot be associated with this waterway.²³⁹

George identifies a possible link between the ‘bastion’ noted on the left hand side of the fragment and the construction of a large buttress on the east bank of the Euphrates in Babylon. This structure is described by Nebuchadnezzar II as part of a series of improvements to the Araḫtum, including the construction of a series of quay walls on the east bank and reinforcement of the west bank. This bastion has been revealed in excavations to be joined to the west side of the southern palace, with 25 m thick walls which projected beyond the edge of the ancient quay into the river.²⁴⁰ If this map notes the presence of this bastion, it can therefore be dated no earlier than the reign of Nebuchadnezzar II (605-562). As George notes, however, it is uncertain whether the city represented on this fragment is Babylon, rather than one of the many other towns located on the western branch of the Euphrates.²⁴¹

The label which identifies the bastion appears to have been deliberately aligned to the upper edge of the ‘King’s Ditch’ rather than the lower edge of the Araḫtum Canal, however, suggesting this structure is located on the lower channel rather than the Araḫtum, on which Nebuchadnezzar’s bastion stood. It is also clear from many field plan examples,²⁴² however, that written labels do not generally identify specific locations but rather the presence of a feature within a particular area. In this case, the ‘area’ in which the bastion stands is demarcated by the upper and lower waterways, the single line boundary in the centre of the fragment and what appears to be the edge of the tablet to the left of the label. It is therefore possible that the bastion was located anywhere in this section, either on the edge of the Araḫtum Canal or the King’s Ditch, and without the larger context of the complete tablet with

²³⁷ Cf. ‘iku’ 1, *CAD* I p. 66.

²³⁸ Unger 1970: 254

²³⁹ George 1992: 355

²⁴⁰ George 1992: 353

²⁴¹ George 1992: 355

²⁴² For field and agricultural estate plans, see chapter two.

a better indication of the conventions found on the rest of the map, the area depicted must remain unknown.

The purpose of the plan is also unclear, and it must be noted that access to the entire tablet might radically alter any interpretation based on such a small fragment. The quality of the drawing suggests the scribe used a fine-pointed drawing instrument and ruler, however, and therefore that the plan was not a simple on-site sketch. The content of the plan has much in common with field and agricultural estate plans, since only the canals are indicated graphically, while a piece of land is noted with border and area measurements. The type of land shown here is unknown, however, and on field plans made by specialist surveyors the unit of measurement used is never omitted.

CHAPTER CONCLUSION

The plans collected here indicate that irrigation systems were graphically mapped in the ancient Near East, though the purposes of such exercises are clearer in some examples than others. The Schøyen Collection Irrigation Map can be interpreted with certainty as a planning tool used as part of an excavation project, and its relationship with the Old Babylonian mathematical problem texts which calculate the amount of labour needed for various assignments elucidates much about the fragmentary captions on the map related to workers.

It appears that the map represents an initial survey which was key to administering this dredging project, estimating how many workers were needed based on the dimensions of the canals and the volume of silt to be removed, proving that the mathematical texts are representative of the approaches taken by engineers in the ancient Near East. It was perhaps made by an official such as the ‘Inspector of Canals’ mentioned in the Old Babylonian Larsa archive, and reveals not only how maintenance programmes were planned in Mesopotamia, but also much about how cartography was applied in tasks which were vital to the economy.

Though it can be understood as a map designed to show the layout of a canal system, the purpose of the Nippur Irrigation Network Plan is much less clear, particularly since no measurements are included on the map and the size of the region it depicts is therefore unknown. Langdon’s suggestion that the plan was composed to show the location of the central field belonging to the palace does not account for the level of detail found on the map, and the presence of a number of towns situated directly on the waterways shown suggests that they serve to geographically contextualise the canals on the plan. The drawing quality of its graphic elements suggests that the map was not drawn on-site, and it is therefore conceivable that the tablet was archived for future use as a reference tool. In this case, the plan may represent a general survey of the region’s irrigation network used to identify the relationship between the primary waterways and the smaller irrigation canals they fed, which could then be consulted in the administration of the irrigation system.

The Sippar canal plan may have served a similar function; though very fragmentary, the map is very well-executed and appears to survey the relationship between the waterways around the city. Again, this tablet may also have been archived for use as a reference tool used in the administration of the irrigation system and the identification of maintenance needs. The Arahtum Canal plan is the most fragmentary of the examples discussed here, and while the

preserved part of the tablet appears to be primarily concerned with waterways, the inclusion of field dimensions may indicate that the piece was originally part of a map designed to survey agricultural fields or urban plots. It contributes much, however, to our understanding of how canals and waterways were cartographically illustrated. Ultimately, the examples discussed here highlight the role of cartography in the administration of irrigation systems in Mesopotamia, systems which were at the core of daily life in the ancient Near East.

CHAPTER FOUR: BUILDING PLANS

INTRODUCTION

The building plan corpus presented here contains forty examples scattered across the history of the ancient Near East, from the Old Akkadian period to the Achaemenid era. Though it has often been noted that these examples represent a very limited collection in comparison to purely written genres, particularly the administrative and legal texts which form the core of Mesopotamia's bureaucratic legacy, it should be noted that this collection represents by far the largest sample of building plans from the ancient world.²⁴³

Due to the limited number of examples, however, constructing a coherent typology of building plans is a difficult task. The four major published works concerned with these texts use a variety of approaches, some of which are more successful than others. Heinrich and Seidl's²⁴⁴ seminal study categorises the tablets chronologically, an approach followed by both Heisel²⁴⁵ in his work on ancient ground plans and Dolce²⁴⁶ in a brief survey of the available material. Bagg's²⁴⁷ recent typology is problematic, however, since he categorises the texts according to three types: plans with measurements, plans with labels and 'silent' plans, which do not contain any written information. This approach raises a number of issues, not least since a number of examples straddle multiple categories, but more importantly because many of the extant building plans are extremely fragmentary. Assigning a fragment to a particular category, when it is conceivable that the unbroken tablet originally included additional information which would alter its categorisation, therefore renders any statistical analysis of the material inherently flawed, and our full understanding of the corpus therefore limited.

The approach taken in this chapter is therefore chronological, though plans will be grouped typologically within each time period according to the building illustrated, defined as either

²⁴³ For a detailed survey of ancient ground plans see Heisel *Antike Bauzeichnungen* (1993). According to Heisel's catalogue, there are fifteen Egyptian, one Greek and five Roman extant plans which show buildings.

²⁴⁴ E. Heinrich & U. Seidl. 1967. "Grundrißzeichnungen aus dem alten Orient." *MDOG* 98.

²⁴⁵ J. P. Heisel. 1993. *Antike Bauzeichnungen*.

²⁴⁶ R. Dolce. 2000. 'Some Architectural Drawings on Tablets: Examples of Planning Activities or Sketches?' *Proceedings of the First International Congress on the Archaeology of the Ancient Near East*.

²⁴⁷ A. Bagg. 2011. 'Mesopotamische Bauzeichnungen' (*EDANES*).

private, public or cultic. Again, it must be noted that even partially categorising these texts according to building type is not without risk since it is often difficult to identify the building depicted, particularly in the case of fragmentary plans. Though any approach may ultimately seem unsatisfactory, using a chronological approach with further typological divisions is here considered the most appropriate method for the investigation of these documents.

Although arguably too small a sample to reconstruct the definitive ‘type’ of building plan, it is clear that the available examples consistently display similar groups of characteristics related to drawing style, and to a lesser extent labelling and scale, in which it is possible to detect a certain amount of convention among Near Eastern building plans. A number of individual plans certainly show innovations which appear to be isolated within our corpus, yet they still adhere to a basic set of principals which form part of a wider tradition related to technical drawing.

All the plans in the corpus, with the exception of one,²⁴⁸ are drawn in the aerial perspective, and tend to be inscribed only on the obverse. Unlike the single line which is sufficient for illustrating the (often theoretical) boundary on a field plan, the physical characteristics of the boundaries within buildings – the walls – tend to be represented using parallel lines, which are occasionally inscribed with a number indicating the thickness of the masonry. It must be noted that a handful of examples show walls represented by single lines, however, though there are only six extant examples compared with thirty three parallel line versions.²⁴⁹ Doorways are most often indicated by a gap in the wall lines which is ruled off at the edges, though they are occasionally noted with the use of a short pair of parallel lines which cut straight across the masonry. These parallel doorway lines can even take the form of wedges drawn with the tip of a writing stylus, even when it appears that the rest of the plan was executed using a fine-pointed instrument.

Additional labels, when included, vary in content. A number of plans contain room designations which can be useful in identifying the type of building shown, though the terms used are not always well-understood. Dimensions are more commonly included than room designations and generally indicate the lengths and widths of interior walls, though some

²⁴⁸ A possible ‘plan’ of a ziggurat or ziggurat stairway is discussed on pp. 177-181, though it is arguable whether this tablet can be categorised as a building plan, it is included here as it has traditionally been classed as a plan and, despite the fundamental difference in terms of perspective, it shares a number of similarities with Near Eastern building plans.

²⁴⁹ See Schmid 1985: 289-293 for a detailed discussion of the differences between the double and single-line types.

examples also note wall thickness, area measurements and total external dimensions. These measurement captions are either aligned along the wall they refer to or, if they are simply inscribed in the middle of the relevant room, are usually clarified with verbal qualifiers such as ‘length’ or ‘width’.

Frustratingly, the unit of measurement used by scribes on building plans is often omitted, in contrast with the extant field plan examples.²⁵⁰ Where the unit of measurement is included, however, the scale of the plan can often be deduced from the available measurements. Scaled re-drawings reveal that none of the plans are completely proportionally accurate, and though some of them certainly provide close approximations of the real proportions of the building shown, it seems that the size and shape of the plan was generally dictated by the size and shape of the tablet used by the scribe.

Finally, the purpose of these building plans appears to differ in each example, and any firm conclusions about their application can only be made through a closer analysis of each tablet. The building plans collected here are examined with particular focus on drawing technique, types of written information and building function, in addition to the conventions they present as an entire corpus, revealing whether there is such a thing as the ‘archetypal’ building plan from the ancient Near East, and what purpose it fulfilled.

²⁵⁰ See chapter two for field plans.

THE OLD AKKADIAN PERIOD

Of the nine building plans²⁵¹ preserved from the Old Akkadian period, four tablets depict private houses, three appear to show public buildings and the remaining two can be categorised as cult buildings. It can also be noted that five of the nine plans from this period come from Girsu, which has yielded the largest amount of building plans across the corpus.²⁵² The Girsu plans form part of the same collection of tablet finds published by Thureau-Dangin,²⁵³ which also contains a number of field plans. Like the Old Akkadian field plans, however, the current location of the building plan fragments from Girsu is unknown, and it must therefore be noted that interpretation of these pieces relies solely on Thureau-Dangin's line drawings.

The plans vary in the quality of their execution but tend to display similar graphic characteristics, such as double line walls drawn with a fine-pointed instrument and either a ruled-off gap in the masonry, occasionally enhanced with pairs of projecting parallel lines, used to indicate doorways. Only three plans from this period include labels; a fragment of a private house plan which is inscribed with the name of the building, and two plans of cult buildings which are inscribed with dimensions and, in one case, room designations.

Three plans of private houses

Two fragments and one well-preserved tablet with drawings on both sides show plans of private houses from the Akkadian period. Only one example, a fragmentary tablet from Girsu,²⁵⁴ bears a label, in this case the name of the building: é pú-ta DÙ GIŠ, 'House of Puta' (see fig. 38).²⁵⁵

²⁵¹ It should be noted that two of these plans appear on the obverse and reverse of a single tablet, a house plan from Eshnunna (fig. 40)

²⁵² See the catalogue of tablets (Appendix I) for the geographical distribution of Near Eastern maps.

²⁵³ RA 4 (1898)

²⁵⁴ AOT b 361, formerly the Louvre? Dimensions unknown; clay. Provenance: Girsu, findspot unknown. This fragment was originally published by Thureau-Dangin (RA 4, 1898), with the series of Old Akkadian field plans discussed above (see chapter two). Like the field plans, this fragment and a number of other building plans which were originally housed in the Louvre are now missing, and were only assigned accession numbers by Thureau-Dangin. Its provenance is stated as Girsu in his article, though its findspot and dimensions are unknown.

²⁵⁵ This name is not well-understood, though 'pú' may be a reference to a well or water source, and a possible translation may therefore be 'House from the Well'.

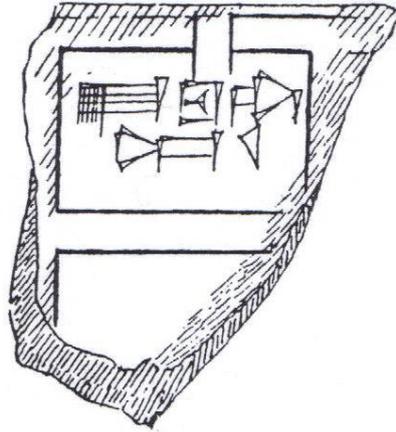


Fig. 38. Fragment of an Akkadian house plan labelled 'House of Puta'

Although it will be seen that a number of ground plans include room names, these labels tend to explain the functions of specific areas, yet in this case the caption 'House of Puta' appears to refer to the name of the building. Furthermore, when the name of a structure is included, it is found in a colophon on the reverse of the tablet rather than on the plan itself.²⁵⁶ The most unusual aspect of this plan, however, is the absence of a doorway leading from the first room to the adjoining space. Since the top edge of the fragment on Thureau-Dangin's line drawing is straight, it can be assumed that this was the edge of the original tablet rather than a break in the middle. In this case, the entrance to the room labelled 'House of Puta' must lead directly to the street. If the second room cannot be accessed from the first, either the building had multiple entrances used to access each room separately, or the space labelled 'House of Puta' represents the entire house, while what appears to be an adjoining room in fact represents a separate dwelling.

This would explain both the lack of doorways between the two rooms and the presence of the label 'House of Puta', which suggests the scribe may have needed to distinguish this house from others on the plan, which were also originally named. Since the tablet is so poorly preserved it is impossible to interpret the fragment any further, though it perhaps represents the remains of either a drawing made in order to identify a single house and its location within a particular area, or a plan made for the purposes of a surveying a group of houses. In

²⁵⁶ See the Old Babylonian plan of a temple in Sippar-Jahrurum (pp. 158-161). A Late Babylonian tablet with a vertical perspective plan of a ziggurat or ziggurat stairway (pp. 177-181) is also inscribed with what may be the name of the structure on the plan itself. However, as will be demonstrated below, this tablet bears the hallmarks of a mathematical problem text rather than a Near Eastern building plan.

either case, this tablet represents the only preserved plan from the ancient Near East which may have originally included multiple private houses, though whether it was used as a tool in architectural planning or as part of a survey commissioned for legal purposes is impossible to determine.

Another plan from Girsu also depicts a building with straight double line walls, though in this case the scribe indicated the doorways by leaving a simple gap rather than using a pair of parallel lines projecting from the masonry (see fig. 39).²⁵⁷ Although the tablet is fragmentary, enough of the plan is preserved to conclude that the scribe did not include dimensions or room labels on the drawing itself.²⁵⁸

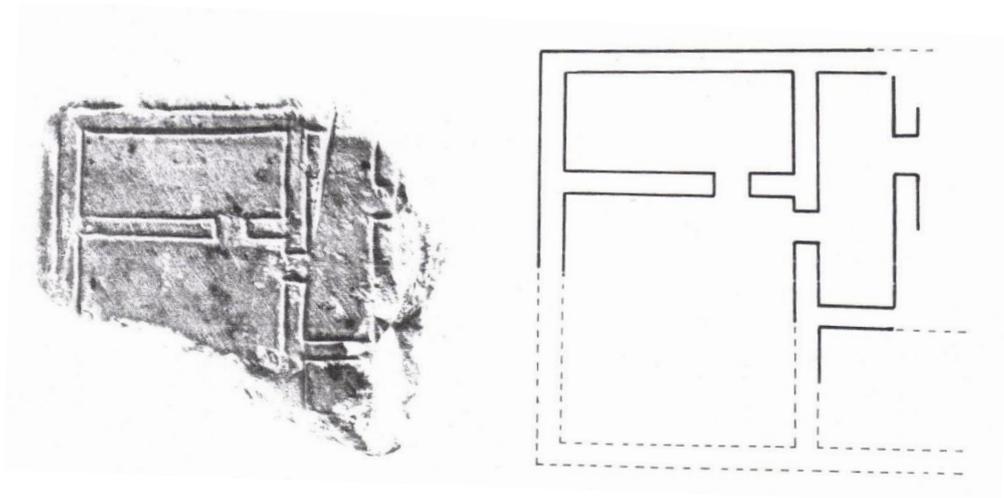


Fig. 39. Fragment of a house plan from Girsu (left) with possible reconstruction

The large room on the lower left hand corner, which has been reconstructed in the drawing on the right, is likely to be a courtyard, in which case the plan would represent the typical layout of a third millennium private house.²⁵⁹ Similar representations of ‘courtyard style houses’ are

²⁵⁷ Louvre AO 6306; clay; 4.5 x 4.9 cm. Provenance: Girsu, findspot unknown.

²⁵⁸ Although it is possible that dimensions were written outside the plan itself, there are no examples of this practice on any fully preserved plan from the ancient Near East.

²⁵⁹ Dolce 2000: 375

also found on a contemporary tablet from Eshnunna,²⁶⁰ where two well-preserved plans are drawn on each side of a tablet and appear to be variants of the same building.²⁶¹ Both plans feature double line walls and simple gaps used to represent doorways; though in this case the scribe was less careful in arranging the intersections of the walls, which can be seen overlapping in a number of places on the plan (see fig. 40).²⁶² Despite their similarities in layout, a number of subtle differences in technique can be seen between the two drawings on each side of the tablet.

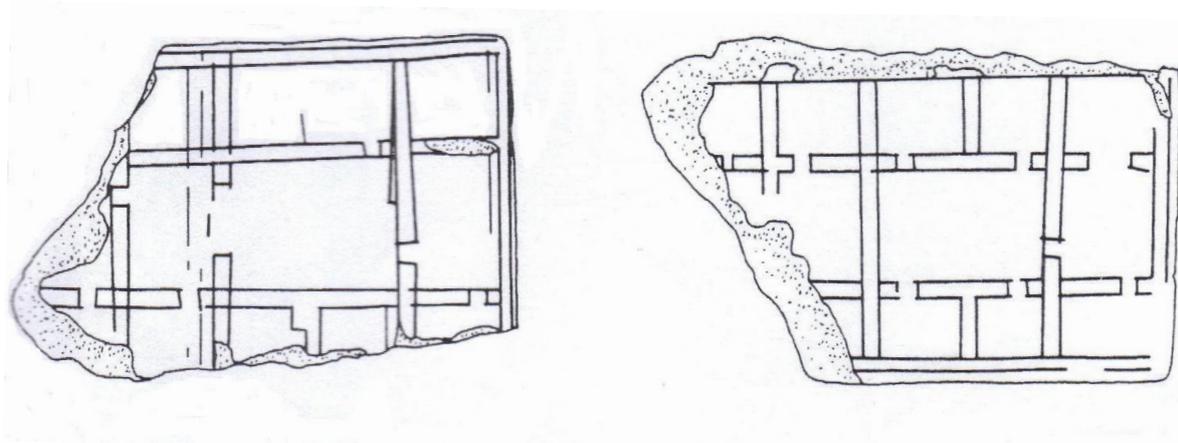


Fig. 40. Two house plans on the obverse and reverse of a tablet

The plan on the obverse (fig. 40, left) is much more cleanly executed than that on the reverse (fig. 40, right), for example, where many of the lines overlap and the wall thicknesses are much less consistent. In the plan on the reverse however, the order in which the scribe drew each element is much clearer; the external walls were drawn first, followed by the vertical walls and finally the horizontal walls. Since the drawing order appears to be similar to a pair

²⁶⁰ According to Bagg (2011: 570), this tablet may have been in the collections of the Oriental Institute Museum, Chicago, though its catalogue number and current location are unknown. Heisel (1993: 18) notes that the tablet is 10.5 x 6.5 cm, and is thought to be from Eshnunna.

²⁶¹ Both Heisel (1993: 19) and Bagg (2011: 555) believe both plans are probably representations of the same house, with the different standards in drawing quality suggesting that the plan on the reverse is a preliminary drawing, while the plan on the obverse may represent the final version.

²⁶² Chicago OIC ? Heisel (1993) does not provide a catalogue number.

of fragments from Girsu discussed below,²⁶³ Heisel suggests these plans may be evidence of the diffusion of an established technical drawing tradition.²⁶⁴

Both plans on the Eshnunna tablet can be considered representative of the typical house layout at the site during the Old Akkadian period, with both versions showing the evolution between what Hill²⁶⁵ describes as the ‘fully-fledged’ house type and the ‘composite’ house type. The ‘fully-fledged’ type consists of a main room completely enclosed by series of rooms on all sides, and the ‘composite’ house type usually consists of the amalgamation of two houses, or parts of two houses, often through encroachment and absorption. Both plans on our tablet are comparable to the ‘fully-fledged’ type, since they show a central courtyard flanked on all sides by suites of smaller rooms, yet both also have an additional row of rooms at one end. These designs may therefore show a preliminary sketch and a final version of a planned extension to an existing ‘fully-fledged’ type house,²⁶⁶ suggesting they were probably commissioned as part of a construction project.

Two plans of public buildings from Girsu

Another plan from Girsu shows part of a building with a series of long, narrow rooms with four internal access points (fig. 41).²⁶⁷ These doorways are indicated by short pairs of parallel lines which run across the internal walls, in contrast to the more common wall gap usually favoured by scribes from this period. A symbol which appears at the lower end of the vertical passageway in the middle of the plan, which resembles an oblique ‘H’, is particularly unusual and is not consistent with the format of the other doorways found in the drawing. It is unclear, however, whether this symbol is a scribal error, or whether it represents a different kind of feature.²⁶⁸

²⁶³ See p. 121 (fig. 42)

²⁶⁴ Heisel 1993: 19

²⁶⁵ 1967: 147

²⁶⁶ Hill 1967: 148

²⁶⁷ Louvre AOT b357, clay, 5.5 x 5.4 cm. Provenance: Girsu, findspot unknown.

²⁶⁸ Dolce 2000: 375

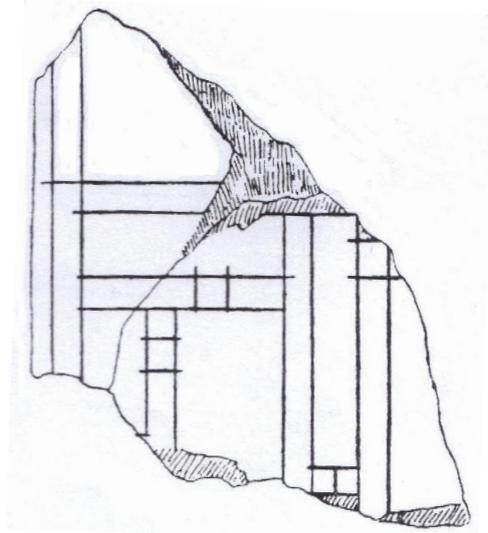


Fig. 41. Fragment of a plan from Girsu showing a building with long, narrow rooms

This arrangement of long, narrow rooms divided into smaller sections by short transverse walls is a common arrangement found in larger Mesopotamian buildings from the Ubaid period onwards,²⁶⁹ suggesting that this structure was very likely a large house or public building. A similar ground layout can be seen in another plan from Girsu, reconstructed from two fragments (fig. 42)²⁷⁰ In this case a wide rectangular room is positioned at a right angle to vertical corridors located in the middle of the building. Although the straightness of the lines suggests a ruling implement was used, the walls are not of a uniform thickness, and on the upper right hand corner one of the short transverse walls cuts across an inner vertical wall.

Despite this minor error, the lines and joins between the walls make it possible to establish a drawing sequence, which shows that the scribe took a highly systematic approach to the order in which elements of the building were inscribed on the plan. The scribe's technique can be compared to that found on the double plan tablet from Eshnunna; he first drew the outside walls followed by the lower transverse walls and the inner side walls, before adding the small interior cross walls.²⁷¹

²⁶⁹ Heinrich & Seidl 1967: 24. Dolce (2000: 374) also compares the layout of the building to the Akkadian palace at Tell Brak.

²⁷⁰ Louvre AOT b355; clay; reconstructed by Thureau-Dangin (1897) to 11.5 x 20 cm. Provenance: Girsu, findspot unknown.

²⁷¹ Heisel 1993: 12.

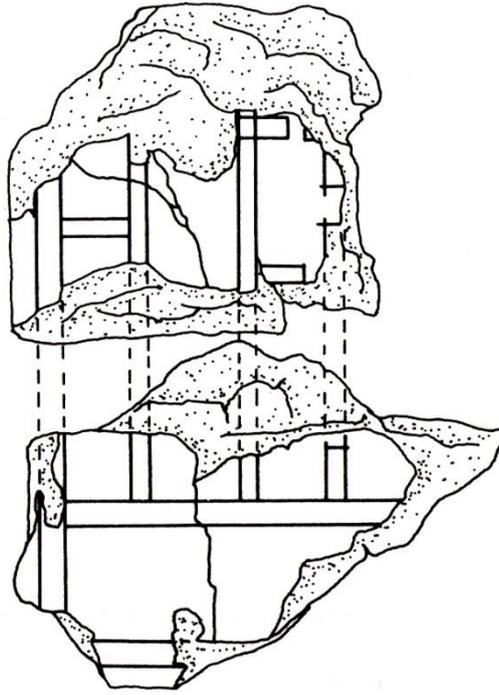


Fig. 42. Two fragments of a plan showing a series of rooms from a public building

Although the plan itself is uninscribed, the tablet bears a fifteen line inscription on its reverse dating the plan to the reign of Naram-Sin (2260-2223):

[lines missing]	[...]
1' [šu-nígin] saġ-níta	[total] men
2' [šu-]nígin munus	total women
3' šu- nígin dumu	total children
[lines missing]	[...]
4' ensí ka-me	of the ensí
5' Lagaš ^{ki} -a	in Lagaš
6' ši-ġar-bi-ba-ak	did this work.

7' in 1 mu	in the year
8' ^d na-ra-am ^d sin	(of) Naram-Sin
9' uš ud é [^d MU.LU-ak]-ke ₄	the foundation of the temple of Bēl
10' [...] nibru ^{ki}	[in] Nippur
11' [...] ^d inana	[...] Ištar
12' [...] nin-ab ^{ki}	Ninab
13' [iš-ku]-nu	he laid. ²⁷²

In light of this inscription, Heinrich and Seidl²⁷³ suggest that the structure depicted on the plan is some kind of public building and that the various groups of people listed here were probably engaged in its construction, though it is equally possible that these people were somehow related to the function of the completed building. In either case, this example contains the most detailed inscription in the entire building plan corpus, and the plan may have fulfilled some kind of bureaucratic function. Indeed, the inscription on the tablet's reverse indicates that it was intended to be kept as a matter of record, though it is unclear whether the plan on the obverse was drawn first for the purposes of planning and construction and then appended with the text, or whether the plan and the inscription were composed at the same time.

A plan of a building within an enclosure

A small fragment of a plan from Nuzi (fig. 43)²⁷⁴ shows a section of a building within an enclosure wall,²⁷⁵ with no dimensions or labels preserved on the remaining part of the tablet. The plan is carefully drawn, despite some overlaps where certain wall sections meet, and the

²⁷² After Thureau-Dangin 1898: 21

²⁷³ 1967: 24. This follows Thureau-Dangin's interpretation (1898: 23).

²⁷⁴ Meek 1935 Plate I, 2. Dimensions unknown, provenance: Nuzi, findspot unknown.

²⁷⁵ Heisel (1993: 15) suggests the outer wall seen on the upper edge of the tablet may be a city wall. In the other examples of city plans from the ancient Near East, however, the buildings within the city walls were not recorded in enough detail by the scribe to show features such as doorways and double walls (see, for example, the Nippur city plan below, pp. 196-206). This suggests that this fragment represents a single building complex. Heinrich & Seidl (1967: 31) and Bagg (2011: 569) agree that this is likely to be a plan of some kind of public building.

projecting parallel lines and gaps used to indicate the entrances are very similar to the technique used by the scribe on the 'House of Puta' plan, discussed above.²⁷⁶ It is unknown whether these short projections indicate a real architectural feature, such as a deep door jamb, or whether they were simply used for graphic emphasis.

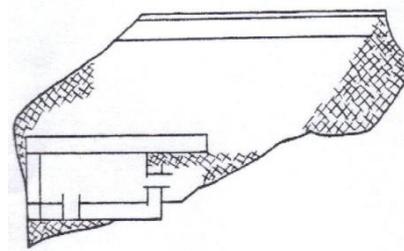


Fig. 43. Fragment of a plan showing a building within an enclosure

The location of this building within an enclosure suggests it was not a typical residential house, and it is likely to have been part of a larger building complex. The absence of features typically found on cult architecture, such as the niche and buttress pattern found on external walls, does not necessarily rule out a religious context for the structure, since the scribe may not have considered these features relevant to displaying the spatial arrangement of the building. Based on the limited evidence which can be gleaned from this fragment, however, it seems likely that this plan represents an administrative building or palace.

A temple within an enclosure

Another fragment from Girsu also shows the corner of a building inside a larger enclosure, though in this case the presence of the niche and buttress pattern on both the external walls of the central structure and the enclosure wall itself strongly suggest a cultic function (fig. 44).²⁷⁷ The walls are drawn using the standard double line, which in this case was adapted to show the outline of niches by extending the line of wall inwards and outwards at regular

²⁷⁶ See pp. 115-117 (fig. 38)

²⁷⁷ Formerly Louvre AO b359; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

intervals, demonstrating how the double line method could be easily adapted to communicate more complex shapes by varying the combination and layout of the lines.²⁷⁸

This fragment also includes dimensions, with wall lengths and the unit of measurement oriented towards the relevant section of the fortifications. The inscription next to the upper wall reads 20 nindan-DU (c. 120 m), the fragmentary measurement inscribed next to the wall on the right hand side of the tablet reads [...] [D]U. gíd, '[...] [D]U long', and the signs inscribed in the courtyard space record an incomplete area measurement, [...] sar 2/3 ŠA.²⁷⁹

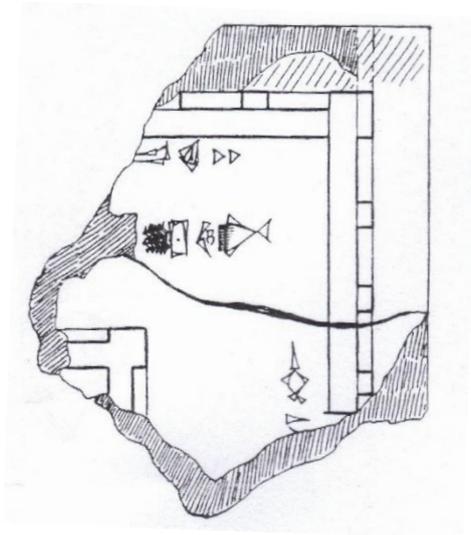


Fig. 44. A plan of a building within an enclosure

With one wall known to be 20 nindan-DU (120 m) in length, the building's enclosure was clearly large, though the incomplete nature of the remaining measurements does not permit a more detailed analysis of its size. It can be assumed that the external wall probably enclosed a stand-alone structure, however, and Dolce estimates that the original tablet may have been up to 20 cm in length to accommodate the full plan of the building and external walls.²⁸⁰

²⁷⁸ Heisel 1993: 13

²⁷⁹ Heinrich & Seidl 1967: 29

²⁸⁰ Dolce 2000: 373

An almost complete plan of a temple

A very well-preserved tablet, also from Girsu, shows the ground plan of a small temple inscribed with room dimensions and a series of labels which indicate spatial functions (fig. 45).²⁸¹ The temple contains six rooms, five of which are given length and width dimensions in a combination of kùš, gi and nindan.²⁸² None of these measurements are written next to the feature they refer to, but are simply inscribed in the middle of each room. Each measurement is clarified, however, with the use of verbal qualifiers including ‘length’ and ‘width’.

The plan is carefully drawn, though a number of superfluous lines on the right hand side of the plan, probably part of a preliminary sketch, were not subsequently removed by the scribe. The double-line walls are straight enough to suggest they were drawn with a ruling instrument and appear to be of roughly uniform thickness. The scribe was less careful with line overlays where the walls meet to form corners, however, and the graphic method used to represent doorways is inconsistent. The main access point, for example, is illustrated by a ruled off gap in the masonry, while the doors on the upper half of the plan are indicated by pairs of lines which cut across the walls.

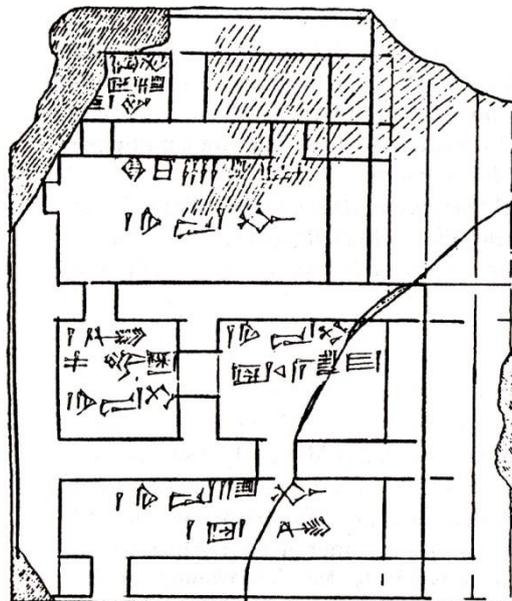


Fig. 45. An Akkadian temple plan with dimensions and room labels

²⁸¹ Formerly Louvre AO b356; clay; dimensions unknown. Provenance: Girsu, findspot unknown.

²⁸² Heinrich & Seidl 1967: 28

The measurements on the plan allow for a detailed analysis of the layout and scale of this building, something which is not possible in the case of many of the examples in the corpus. Firstly, the main entrance to the temple on the bottom left hand corner of the plan leads to a room inscribed with the measurements ‘1 nindan-DU 2 kùš gíd’ (7 m length) and ‘1 dağal gi’ (3 m width). By a single offset doorway this room leads to a large square shaped area labelled *kisal*, ‘courtyard’, given as ‘1 nindan-DU gíd’ (6 m length) and ‘dağal 10 lál 1kùš’ (10-1 kùš = 4.5 m width). From here, a doorway on the left hand side of the *kisal* leads to a *pa-paḥ*, ‘shrine’, which is 1 gi wide and ‘1 nindan-DU gíd’ (6 m length). A doorway at the top of this room leads to the *ki-tuš*, ‘dwelling place’, labelled as 8 kùš and ‘1 nindan-DU gíd’ (6 m length). This is the only room with two doorways, one of which leads to a small, un-inscribed room at the top right hand corner of the plan, and another which leads to the *é-ša*, ‘inner room’, a term which is not well-understood. Furthermore, the scribe only included the width of this room, given as 4 kùš.²⁸³

Masonry and doorway dimensions are not given on the plan, though it is probable that the walls were intended to be of a uniform thickness, no doubt dictated by brick size, and the doors may also have been built to a standard set of dimensions.²⁸⁴ A comparison between the shape of the building drawn on the plan and the shape of the building according to its measurements quickly show that it was not drawn to scale, though the design is a rough approximation of the real shape of the temple according to the dimensions given (see fig. 46). The *kisal*, for example, is presented as roughly square on the plan, with the side on the horizontal axis slightly longer than the side on the vertical axis. According to the measurements given by the scribe, however, these proportions should be reversed and the vertical side should be longer than the horizontal side.²⁸⁵

²⁸³ Heinrich & Seidl 1967: 29

²⁸⁴ Heisel 1993: 11

²⁸⁵ Heisel 1993: 11

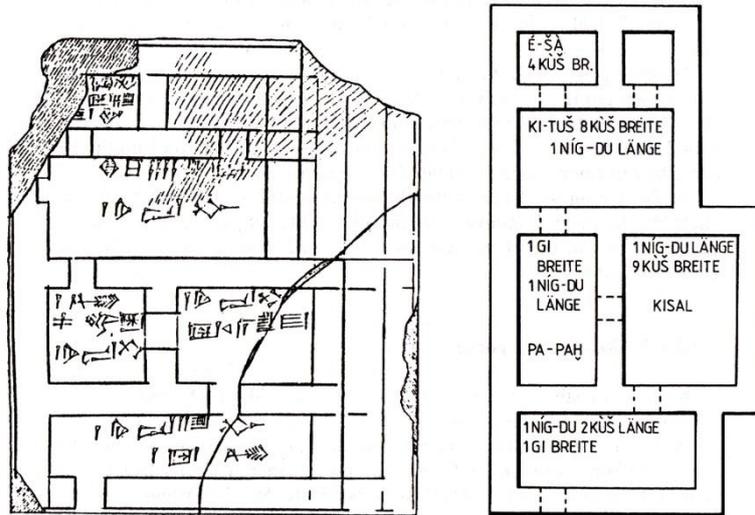


Fig. 46. Drawing of a temple plan from Girsu, with a correctly scaled reconstruction on the right

The correctly scaled re-drawing shows that, according to its measurements, the temple was longer and narrower than its graphic representation on the plan. It is possible, however, that the scribe abandoned the preliminary lines sketched on the right hand side of the tablet in order to make the building narrower, and thus more proportionally accurate. Some of the room designations also appear to be at odds with the building type suggested by the layout of the plan, since it has been argued that many of these labels are indicative of a private house, yet the layout of the building strongly suggests that the plan represents a temple.²⁸⁶ Heinrich and Seidl²⁸⁷ rightly point out that the presence of a *pa-paḪ*, ‘shrine’, is not incompatible with the design of a residential building, since there is evidence that cult rooms were occasionally found in private houses during this period. The *é-ša*, ‘inner room’, is not specific enough to suggest either a temple or house and the *ki-tuš* could be translated as ‘dwelling place’ in the sense of a living space or bedroom, or as a ‘seat’ in the sense of a throne or pedestal where the statue of the god resides in a temple.²⁸⁸

²⁸⁶ Heinrich & Seidl (1967: 29) reject an interpretation of the plan as a temple, followed by Bagg, who does not discuss the plan in detail but lists it as a house in his catalogue (2011: 568). Heisel (1993) also follows Heinrich & Seidl’s interpretation, but is more concerned with the mechanics of the drawing and its scale rather than its philological content.

²⁸⁷ Heinrich & Seidl 1967: 29. Cf. *CAD* ‘P’ (p. 101).

²⁸⁸ Heinrich & Seidl (1967: 29) translate *ki-tuš* as ‘dwelling place’, which they correct from Falkenstein’s earlier interpretation of *ki-tuš* as ‘seat’ in this context. As mentioned above, *ki-tuš* could refer to either a dwelling place in a residential or religious context (where it is the ‘dwelling place’ of a god); or as a ‘seat’ or pedestal for a divine statue etc. in a temple or shrine (cf. *ePSD* ‘*ki-tuš*’, accessed 04/05/2012; *CAD* M (II) pp. 251-252, *mūšabu*; also *CAD* Š (III) pp. 172-180, *šubtu* A).

Despite these issues, however, the layout of the building ultimately renders it incompatible with the private house theory. Even if *ki-tuš* is translated as ‘dwelling place’, there are few other rooms on the plan which would have provided adequate living space for its occupants. The large reception room, for example, would not have been used as sleeping space due to its proximity to the street, and the courtyard and *pa-paḥ* are dedicated to other functions. A private house would require at least a kitchen in addition to bedrooms and, with the possible exception of the *ki-tuš*, neither of these is identified on the plan. The ‘inner room’, the meaning of which is unclear, and the unlabelled room in the upper right hand corner could have fulfilled these functions, yet even in this scenario the layout of the house is fundamentally unsuited to living space.²⁸⁹ With the exceptions of the topmost rooms, every room in the house is accessed by walking through the preceding room, unlike the ‘courtyard style’ houses where all or most rooms are accessed from a central courtyard. Not only would this result in a lack of privacy, it would also be impractical to negotiate such a spatial layout on a daily basis, even if the least used rooms were located towards the back of the house.

In light of this, it seems likely that this plan represents a cult building. The detailed measurements provided by the scribe suggest the tablet could have been used as a planning or construction tool, though the absence of dimensions in the upper room on the right hand side suggests perhaps that either the plan is unfinished, or that the scribe was less concerned with the complete dimensions of the building and more with arranging its spatial layout according to room function. In this case, the measurements were probably not intended to be consulted by builders, but were rather to illustrate some of the general dimensions for the purposes of finding a suitable building plot for its construction.

²⁸⁹ B. Haskamp, *Pers. Comm.*, June 2011

THE UR III PERIOD

Although only six plans are preserved from the Neo-Sumerian period, the extant examples provide an interesting cross-section of building types in the form of one private house plan, two public buildings and three cult examples. The Neo-Sumerian collection also provides the first example of a ground plan found on a piece of sculpture, in the form of the temple plan on Gudea Statue B, in addition to the earliest plan of a ziggurat.

A House Plan from Umma

A plan from Umma dated to the Ur III period shows a roughly square building with a series of six rooms arranged around a large central space (see fig. 47).²⁹⁰ The layout of the building suggests it is a residential ‘courtyard style’ house, in which each room was accessed from the large space in the centre of the building.²⁹¹ Dimensions are inscribed in each room with the unit of measurement used (kùš) and, like a number of other examples, these labels are oriented towards the wall they refer to.

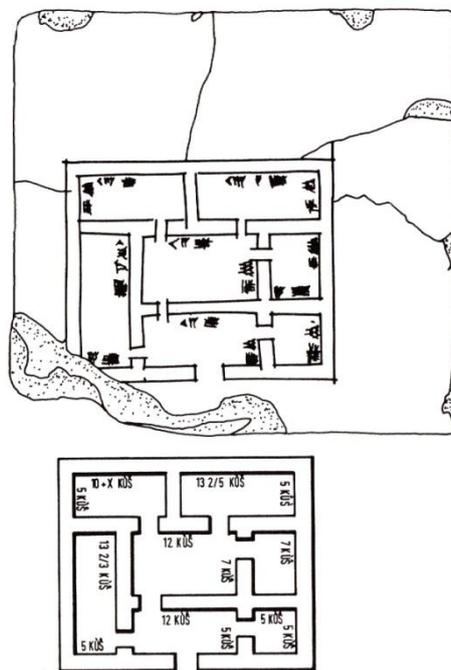


Fig. 47. A plan of a house from Umma, with scaled re-drawing below

²⁹⁰ Vorderasiatisches Museum Berlin, VAT 7031; clay; 12 x 11.3 cm. Provenance: Umma, find spot unknown.

²⁹¹ Heinrich & Seidl 1967: 33.

Although the scribe used a fine-pointed drawing instrument, the plan appears to have been drawn free-handed since many of the lines are curved and the walls are not of a uniform thickness. Like the Akkadian ‘House of Puta’ plan and the plan of a building within an enclosure from the same period, the scribe applied a similar drawing technique to all the doorways, which are indicated by a gap and a short pair of parallel lines projecting from the walls. Erasure marks are also visible between these doorway spaces, which suggests the scribe first drew the walls and then marked the doorways with pairs of lines before erasing the overlaps.²⁹²

A comparison between the original plan and a scaled re-drawing based on the given dimensions (see fig. 47) shows that the proportions of the design are roughly accurate, though some of the drawn lengths on the plan do not completely correspond to the inscribed measurements. Both the rooms to the right and left of the entrance space, for example, are given a width of 5 kùš, yet are actually different widths on the drawing. Using the detailed dimensions on the plan, however, it is possible to calculate the scale used by the scribe. One kùš on the plan corresponds to 27 mm, resulting in a scale of roughly 1:180.²⁹³

Interestingly, a measuring instrument carved next to a plan on Gudea Statue B is divided into units of which the smallest is 27 mm,²⁹⁴ and another Ur III period ground plan²⁹⁵ appears to be based on the same correlation of 1 kùš = 27 mm. This leads Heisel²⁹⁶ to suggest that this may have been an established scale used in Neo-Sumerian building plans. Since the provenance of the other example with a scale of 1:180, the so-called John Rylands Library plan,²⁹⁷ is unknown, however, it is conceivable that both plans come from the same archive and were made by the same scribe. In this case, the use of this scale may not have been a firmly established convention among all Neo-Sumerian scribes. Since only three of the five Neo-Sumerian plans in the corpus include enough measurement information to permit an examination of their scale, however, it is also possible that the plans without dimensions follow the same pattern.

²⁹² Heisel 1993: 23

²⁹³ Heisel 1993: 23.

²⁹⁴ This measuring instrument and the plan on Gudea Statue B will be discussed in more detail below (pp. 172-175).

²⁹⁵ This is the so-called John Rylands Library plan (discussed in more detail below). Since the provenance of the John Rylands Library plan is unknown, it is conceivable that it was made by the same scribe who produced the house plan from Umma. In this case, it may be that the use of the 1:180 scale was not an established convention among Neo-Sumerian scribes.

²⁹⁶ 1993: 23. Dolce (2000: 549) rejects Heisel’s theory on the basis that it is unlikely that the scribe would have used a measuring instrument, but does not expand on why this might be the case.

²⁹⁷ This plan is discussed in more detail below (pp. 135-137)

The use of a specific scale by the scribe would also explain the most unusual aspect of this plan: the fact the drawing is much smaller than the tablet. In the case of almost every other²⁹⁸ completely preserved building plan in the corpus, the size and shape of the plan was adapted to fit the size and shape of the tablet. In this case, the disparity between the size of the plan and the size of the tablet suggests that either this plan is a direct copy of a drawing from a smaller tablet, or that the size of the plan was not dictated by the dimensions of the tablet since the scribe was using a scale which resulted in a smaller drawing. In light of the use of the 1:180 scale found on both the John Rylands Library plan and the example from Umma, and the correlation between the measurement system used on these plans and the measuring instrument found on Gudea Statue B, the latter seems most plausible.

A plan of a building from Nippur

This partially preserved plan from Nippur does not contain any dimensional information, but does, however, give four labels identifying room function (fig. 48).²⁹⁹ The tablet, reconstructed from four fragments, is badly eroded on the surface, yet it is possible to see part of a building with a central courtyard area surrounded by seven rooms. The room in the upper left hand corner is labelled é-mu ‘kitchen’, the adjoining room is labelled é-luḥ ‘washroom’, and the edge of the room seen in the upper right hand corner of the plan is labelled [é]-uš-bar-r[a] ‘weaving [room]’. The inscription in the room seen on the lower right hand corner of the fragment reads [é]-dub ‘tablet [room]’.³⁰⁰

²⁹⁸ The Old Babylonian period lenticular ‘school texts’ from Larsa provide an obvious exception to this trend, though since these tablets are round the scribe would not have been able to align the straight walls of the buildings shown to the curved edges. No other example on square or rectangular tablets shows such disparity between the size of the plan and the tablet it is drawn on.

²⁹⁹ National Museum of Iraq 6NT-553; clay, 6.2 x 9.1 cm. Provenance and findspot unknown.

³⁰⁰ Heinrich & Seidl 1967: 34.

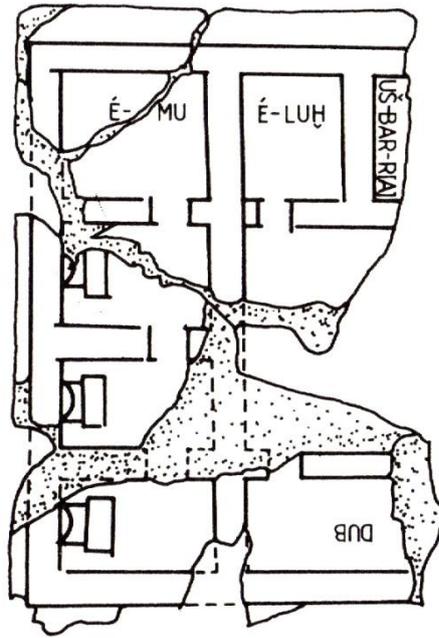


Fig. 48. Plan of a building from Nippur with labels indicating room functions

These functional designations suggest the plan represents an area in which some kind of production took place, and which formed part of the economic area of a larger complex. This is particularly suggested by the weaving room and the presence of an area dedicated to the storage of tablets, since this room probably housed the archive related to production in the building.³⁰¹ The most unusual aspect of the plan, the series of devices seen in the three lower rooms on the left hand side of the tablet, also supports this interpretation, since they probably represent rolling mills.³⁰²

The presence of these devices on the plan is highly unusual, since graphic representations of elements other than walls, doorways and stairs rarely feature on plans from the ancient Near East.³⁰³ The fact that this plan contains written room designations makes their presence even more anomalous, since it would seem more logical for the scribe to indicate the purpose of

³⁰¹ Heinrich & Seidl 1967: 34.

³⁰² Heinrich & Seidl 1967: 34 and Bagg 2011: 552. Heisel (1993: 25) is more cautious in interpreting these devices, since there are no other examples of this type of device on any other plan from the ancient Near East, and it is not clear which perspective they are drawn in. Wiseman (1972: 146) identifies these objects as cult stands, but in the context of the plan, which does not appear to be related to any kind of cult activity, the interpretation as rolling mills seems more likely.

³⁰³ The plan on Gudea Statue B, however, features two objects which may represent cult stands (see pp. 146-159), and an Ur III ziggurat plan also contains graphic representations of a series of round objects (see pp. 138-144).

the room with another written label, rather than a graphic indication. Symbols such as these can be particularly problematic when used on ground plans, since they are often only recognisable, and therefore effective, when they are part of an established graphic repertoire. Since the symbols used here do not appear on any other example, however, interpreting them is potentially problematic for the viewer.

The fact that the scribe chose to represent these devices graphically, with the risk of using a symbol not familiar from other plans, suggests the purpose of this design was to show the particular location of these devices within the building, perhaps because this was where they were to be installed. In this case, this tablet may represent one of the few plans which function as a guide made in order to show the location of a series of objects not integral to the structure of the building.

A fragment of a 'labyrinthine' building

A large fragment of a plan from Nippur in the National Museum of Iraq shows a particularly unusual building with series of long, narrow rooms inscribed with length and width measurements, with the remains of what appears to be a larger room or courtyard in the upper left hand corner (see fig. 49).³⁰⁴ According to Heinrich and Seidl,³⁰⁵ a very fine grid is visible on the tablet, the first example of this type of drawing aid found on a plan from the ancient Near East,³⁰⁶ which allowed the scribe to accurately plot the complex layout and arrangement of corridors whilst maintaining consistent wall thicknesses.

³⁰⁴ National Museum of Iraq, Baghdad (catalogue number unknown); clay. Provenance: Nippur, findspot unknown. At 15.5 x 12.9 cm, this fragment is larger than most of the completely preserved building plans in the corpus, although since the layout of the building is so unusual, it is difficult to estimate how much of the plan is preserved and therefore the size of the original tablet.

³⁰⁵ Heinrich & Seidl 1967: 12

³⁰⁶ A tablet with a plan of a temple from the Neo-Babylonian period with a 'brick grid' is discussed below on pp.172-175. In the case of the later example, the grid is much more deeply incised on the tablet.

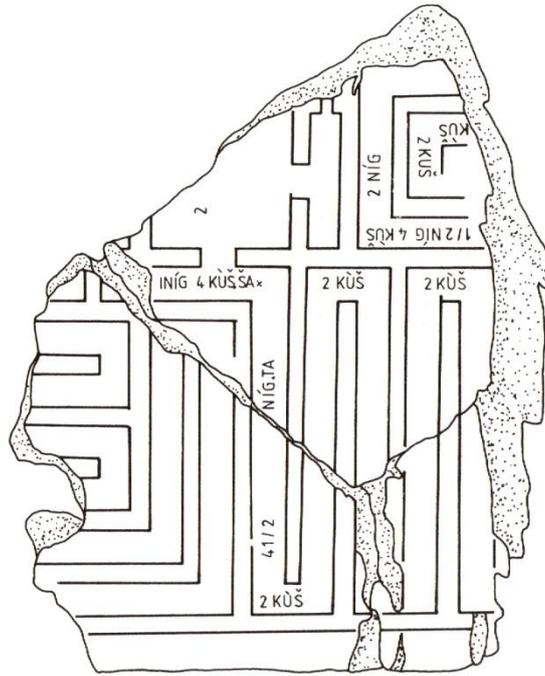


Fig. 49. Drawing of a fragment of a 'labyrinth' type building plan from Umma

The plan includes a series of measurements, given in *kùš* and *nindan*, although, given the complex layout of the walls and passages, it is difficult to assign the given measurements to their corresponding architectural element. While it can be assumed that the label '4 ½ *nindan*-DU' (= 54 *KÙŠ*) corresponds to the length of an aisle, for example, the label '2 *kùš*' could refer either to wall thickness or the width of each aisle. Heisel³⁰⁷ points out, however, that the label 2 *kùš* is likely to refer to wall thickness since, if the measurement referred to aisle width, the walls would be unusually thin. The included dimensions allow for an analysis of the scale of the plan, which reveals that the drawing is well-proportioned according to the given measurements. The average *kùš* on the plan is 1.5 mm long, resulting in a scale of c. 1:360.³⁰⁸

Although the plan can be understood in terms of its dimensions and scale, however, its fragmentary nature and lack of functional labels make an interpretation of the building's purpose difficult. It has been suggested that the long corridors most resemble storerooms, yet the single entrance to the long and circuitous passages makes them completely unsuitable for

³⁰⁷ 1993: 26

³⁰⁸ Heisel 1993: 27

regular access.³⁰⁹ Heisel³¹⁰ suggests the plan may represent a ‘labyrinth’ design, with some kind of magical or religious significance. This is unconvincing, however, since a hypothetical labyrinth design which was not intended to be constructed would be unlikely to include room dimensions and wall thicknesses. A pair of ‘labyrinth’ tablets recently identified in the Schøyen Collection,³¹¹ for example, show designs which clearly imitate the style of building or city plans from the ancient Near East, yet they do not include measurements since these would be completely redundant on a design with a purely aesthetic function. The purpose of the building on this plan, therefore, remains unknown.

The John Rylands Library Plan

A well-preserved tablet of unknown provenance, now in the Cuneiform Collections of the John Rylands Library, shows the plan of a building accompanied by a series of measurements given in kùš and GAR.³¹² The plan shares a number of graphic similarities with the Ur III house plan from Umma, discussed above, though the John Rylands plan has traditionally been interpreted as a temple. The obverse and one edge of the John Rylands plan are inscribed, showing a building with ten rooms following a highly regular layout, with double line walls and ruled off gaps for doorways (see fig. 50). The plan is accompanied by a total of nineteen measurements, four of which are partially damaged, giving internal and external wall lengths and one wall thickness.³¹³

³⁰⁹ Dolce (2000: 375) tentatively compares the layout of the building on the plan to storerooms found at both Uruk and Ur. Heinrich & Seidl (1967: 35) also suggest a possible storage function for the passages, but also admit that the single access point would make such a room arrangement unsuitable for this purpose.

³¹⁰ 1993: 26

³¹¹ These tablets are discussed below on pp. 214-216

³¹² John Rylands Library, Manchester, Clay Tablet 930; clay; 11.1 x 9.2 cm. Provenance and findspot unknown.

³¹³ Donald 1962: 184

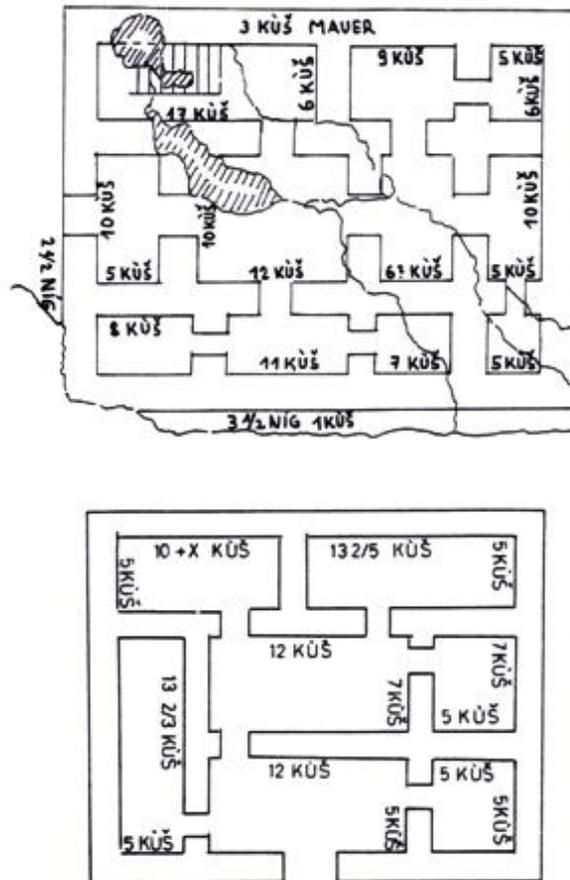


Fig. 50. The John Rylands Library plan, with scaled re-drawing

All internal measurements, given in kùš, are oriented towards the wall they refer to, removing the need for verbal qualifiers such as ‘length’ and ‘width’. The partially preserved external width measurement of the house is given as ‘2½ GAR [...]’ (31.5 m [...]), and the length is given as ‘3½ GAR + 1 kùš’ (49.5 m). Unusually for a Near Eastern plan, the thickness of the walls is inscribed inside the wall at the top of the tablet, clarified by the draftsman with the additional caption: [3] kùš GIŠ. ZI.TA, ‘[3] cubits through the wall’ (1.5 m).³¹⁴

Although the plan contains much detailed measurement information, a number of dimensions are omitted, including the width of the series of lower rooms and the widths of the third room in the middle row and the middle room in the top row. Assuming the walls are of a uniform thickness, however, the width of the lower series of rooms could be calculated using the now damaged external width measurement of the house.³¹⁵ Finally, it seems likely that the series

³¹⁴ Donald 1962: 184

³¹⁵ Donald 1962: 185

of parallel lines in the upper left hand room are likely to represent stairs which led to either the roof or a second storey, since there is no other type of feature which would resemble such a graphic symbol.

According to the measurements given on the plan, the design itself appears to be fairly accurately proportioned, with only minor differences in shape between the plan and a scaled re-drawing (see fig. 50).³¹⁶ The correctly scaled drawing shows that the longer side of the house was shortened by the scribe, though this was presumably in order to fit the shape of the tablet, a convention seen in the majority of building plans from the Near East.³¹⁷ Given that the average length of a kùš on the plan is 27 mm, and the length of a Sumerian kùš was c. 50 cm, the scale of the drawing is 1:180 which, as discussed in relation to the Ur III house plan from Umma, may suggest that the scribe was working with an established scale.³¹⁸

The regular layout of the plan suggests the design of the building was not restricted by external spatial requirements, but was rather intended to be constructed in an open area such as a temple or palace precinct. Labels which indicate room functions would make the purpose of the building much clearer, though in light of the shape of the structure and its similarities to contemporary cult buildings such as the Chapel of Išuliya at Tell Asmar, the Gigarku Temple of Ningal and the Temple of Enki-Amarsin at Ur, the plan is likely to represent a temple.³¹⁹

The primary innovation of this plan is the inclusion of wall thickness, a convention which, although found on other examples, does not appear to have been adopted as standard practice on building plans in the ancient Near East.³²⁰ Although measurement labels were not applied systematically to the plan, the scribe included more dimensions than is typical for ground plan drawings, and oriented them towards the relevant architectural element, removing the need for verbal qualifiers. The scribe also appears to have attempted to draw the plan roughly to scale though, as in many cases, he was clearly inhibited by the size and shape of the tablet. The detailed measurements included here suggest the tablet was intended for use in planning,

³¹⁶ Heisel 1993: 22

³¹⁷ As discussed above (pp. 129-131), an exception is provided by the Ur III house plan from Umma and a series of Old Babylonian school texts from Kish (pp. 150-154)

³¹⁸ Heisel 1993: 22

³¹⁹ Heisel 1993: 33. Heinrich & Seidl (1967: 33) argue that, although there is no cult niche on the plan, the nature of the room groupings and their consistency with contemporary cult buildings argues strongly in favour of a temple design. Donald (1962: 186) and Bagg (2011: 549) both agree with this interpretation.

³²⁰ Wall thickness also appear on an Old Babylonian plan of a palatial house (see below, p. 167-168)

either for the purpose of finding a suitable plot of land or to arrange the spatial layout of the building using measurements to assign portions of the structure to different rooms.

A plan of a ziggurat high temple from Nippur

Two fragments of a tablet in the Hilprecht Collection at the University of Jena show an aerial perspective design of the stages of a ziggurat with the plan of a building in the centre (see fig. 51).³²¹ Though often described as a ‘ziggurat ground plan’, the piece can be more accurately described as a high temple ground plan, since the design is concerned with the layout of the temple at the summit of the ziggurat, rather than the layout of the ziggurat’s foundations. Although there is no direct join between the pieces, a photograph from the University Museum in Philadelphia³²² shows a more complete version of the plan, taken before the tablet was damaged prior to its arrival at the Hilprecht Collection (see fig. 52).³²³

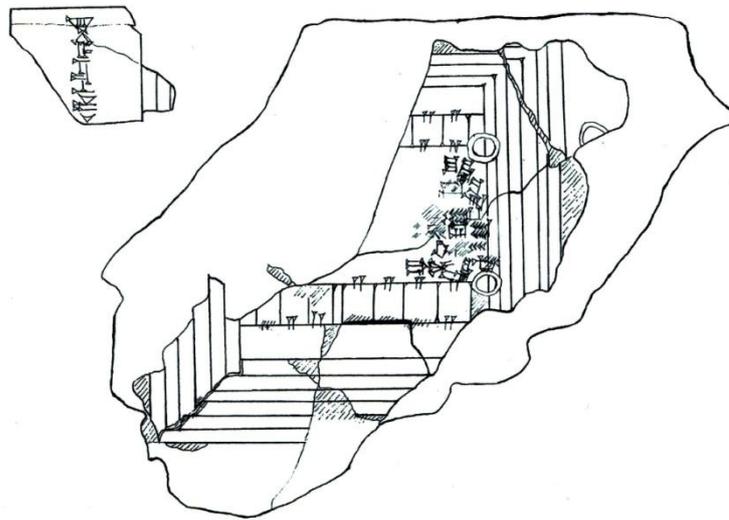


Fig. 51. Line drawing of two fragments of a ziggurat high temple plan from Nippur

³²¹ Hilprecht Collection, HS 200 a 1 + 2; clay; c. 15 x 12.5 cm. According to Oelsner (1984: 63), a handwritten note by Hilprecht found with one of the fragments states that the plan was found at Nippur, though no find spot is given.

³²² Negative 5847. The photograph was among a group sent to the University of Jena showing finds now housed in the Hilprecht Collection, and is noted with “Nippur IV series A”, indicating that the tablet was found during the 1899/1900 season. Based on the additional information provided by this photograph, Oelsner (1989: 51) reconstructs the original tablet to around 15 x 12.5 cm.

³²³ This line drawing based on a photograph from the University Museum Philadelphia, now also in the Hilprecht Collection, does not include the central inscription seen on fig. 30.

The plan shows a series of seven nested squares with a temple at the centre which consists of a large central space flanked on either side by a series of small, square rooms.³²⁴ Though carefully drawn with clean, straight lines, the steps of the ziggurat are not evenly spaced and some stages appear to be narrower than others. The rows of rooms located either side of the large central area are also unevenly spaced and do not follow a symmetrical pattern, while a narrow corridor between the fifth and sixth rooms on the left-hand side is not mirrored in the suite of rooms on the right. It is therefore unclear whether the spatial arrangement of these rooms is accurate, or whether the scribe intended to sketch only a rough layout of the temple.

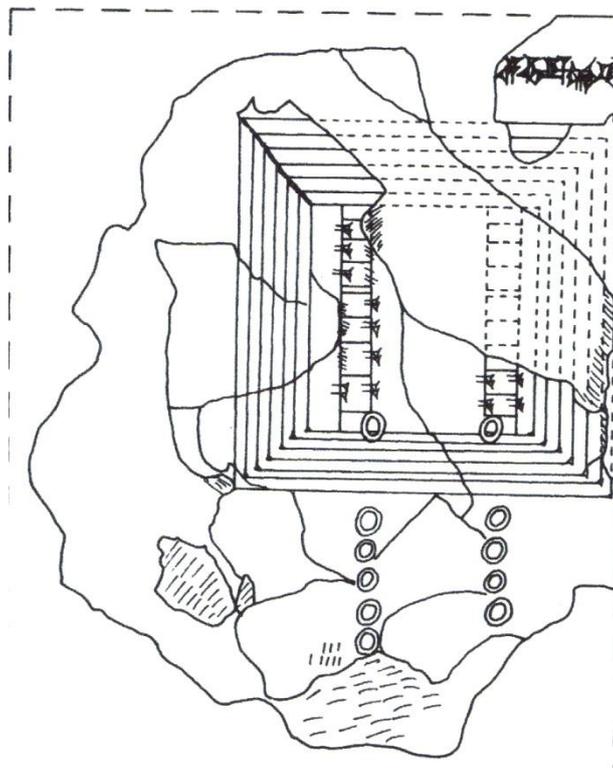


Fig. 52. Line drawing based on a photograph showing a more complete version of the tablet

The pairs of double wedges on each side of the rooms in the high temple appear to show doorways and, like many other examples in the building plan corpus,³²⁵ were clearly drawn with a stylus rather than the fine pointed instrument used for the rest of the plan. It seems

³²⁴ Oelsner 1984: 63

³²⁵ See for example the Old Babylonian school texts from Kish, pp. 150-154

impractical to abandon the drawing tool used on the rest of the plan in order to use a stylus to note the doorways, which suggests the scribe deliberately chose to use a double wedge to indicate these access points. As in a number of other examples where a combination of drawing tools was used, this is perhaps because the double wedge doorway was born out of a particular type of technical drawing which predominantly used the writing stylus. The wedge doorway may therefore have gained currency as a standard method of indicating access points, even when the scribe was able to use other instruments better suited to the task, demonstrating the development of a certain amount of convention in Near Eastern building plans.

Although the scribe did not include dimensions or any other technical information on the plan, a six line inscription is partially preserved on the large central area, in addition to a broken line of text on the smaller of the two fragments which refers to the goddess Ninlil (see fig. 51).³²⁶ Unfortunately, no satisfactory translation has been found for the central caption, though a plain reading of the inscription indicates that it references a series of place names, none of which is attested elsewhere:

ku₃ ħul-ga^{ki}
ku₃ igi-ur-ga^{ki}
ħa-ħul-ga-ga^{ki}
ħa-igi-ur-ga^{ki}³²⁷

Oelsner dates the plan on the basis of palaeographic evidence to the late Old Babylonian or early Kassite period,³²⁸ though it is placed by Suter³²⁹ in the Ur III period. Indeed, the writing on Oelsner's earlier line drawing (fig. 51) is much more characteristic of the Ur III period than that found on his second copy (fig. 52), and I follow Suter's Ur III dating here.

The most unusual features found on the design are the two rows of parallel circles, which start at the lower edge of the high temple and then extend outwards beyond the base of the

³²⁶ Oelsner 1984: 63

³²⁷ Reading by A. Livingstone, pers. comm. 25/06/12

³²⁸ Oelsner 1984: 64

³²⁹ Suter 1997: 5-6

ziggurat. These symbols have no counterpart in any other building plan from the ancient Near East, and their purpose here is unclear. Only three circles are visible on the currently preserved fragments of the plan (fig. 51), though it is possible to see at least five pairs on the photograph of the original tablet, while a sixth circle at the edge of the tablet is also likely to have originally been one of a pair (fig. 52). One interpretation of these shapes is that they represent aerial perspective drawings of columns though, as Oelsner³³⁰ points out, columns are virtually unknown in the ancient Near East during this period. He suggests, rather, that they represent some kind of stairway or path to the top of the ziggurat, and it is not unreasonable to suppose that the scribe was faced with a difficult task when attempting to indicate a stairway on top of a stepped structure.

A more satisfactory explanation, however, would be to assume that these circles represent circular, stand-alone structures. It has been demonstrated thus far that building plans generally only show the essential architecture of a structure, such as the walls and doorways. It can also be assumed, however, that there were many more ephemeral items and objects found in and around buildings, particularly in cult contexts, such as reed and textile structures which were not integral to the fabric of the building.

A *paṭiru* or *pāṭiru* (GI.DU₈),³³¹ for example, is type of a ritual table. These tables are mentioned in a text which describes the proper treatment and placement of cult objects,³³² with specific reference to the setting up of objects in a workshop and courtyard: 11 GI.DU₈ *ana* IGI-šú-*nu* KEŠDA, “11 *paṭiru*-altars you set up before them”.³³³ The same type of ritual table is also mentioned in another section of the text which provides instructions for the placement of ritual objects: 9 GI.DU₈.MEŠ KEŠDA-as, “You build up 9 offering-tables.”³³⁴ In this case, however, the scribe illustrated this instruction by drawing a line of nine circles on the tablet: ○ ○ ○ ○ ○ ○ ○ ○ ○ ○, which, though only single circles rather than rows of nested circles, can be compared to the presumably aerial perspective shapes on our ziggurat plan.

³³⁰ Oelsner 1989: 51

³³¹ Cf. ‘*paṭiru*’ CAD P, p. 303

³³² Walker & Dick 2001: 228 (Text A. 418). The dating of the text is unclear, since it may be a composite and is reconstructed by the authors from both Assyrian and Babylonian sources, with their colophons suggesting they were copied from earlier Babylonian versions.

³³³ Text A. 148; 46, translated by Walker & Dick 2001: 244

³³⁴ Text A. 148; 36-37, translated by Walker & Dick 2001: 235

The term *uriggallu* also describes a piece of cult apparatus, either a standard or shaft upon which an emblem is placed, which are often arranged in two rows of seven,³³⁵ quite possibly the number of circles which originally featured on the complete ziggurat plan. Representations of such cult items also appear in the visual arts, such as the stone Enheduanna Disk, dated to around 2300 BCE, which features the priestess in front of a ziggurat making a libation over a round container (see fig. 53). Similarly, a scene on the Neo-Assyrian Bronze Gates of Shalmaneser III shows an offering being made over a round table.



Fig. 53. Photograph showing a reconstruction of the Enheduanna Disk

³³⁵ Cf. '*uriggallu*' (1) CAD U/W p. 223.

The fact that rituals, accompanied by the proper cult paraphernalia, took place in front of ziggurats is confirmed by a text which contains a line describing the placement of loaves before the temple: 16 *šibtu maḥar ziq-qur-rat u ilbīti ša ziq-qur-rat*, “(the baker will place) 16 loaves before the temple tower and the god of the temple tower.”³³⁶ It is likely that these loaves were placed on some kind of table, suggesting another possibility for the interpretation of the circles on the ziggurat plan.

While the type of feature depicted by the circles on the plan cannot be linked to any of these items with certainty, it is clear that many round cult objects were used in Near Eastern ritual, some of which might have been placed outside ziggurats. The purpose of our plan may therefore not have been to show the architectural features of the ziggurat or high temple, but rather the proper locations of a series of cult objects represented by the rows of circles, much like the plan of a building which shows the locations of a series of rolling mills, discussed above.³³⁷ The ziggurat plan can also be compared to a ritual text edited by A. Livingstone, which contains instructions on the proper ritual for covering a cult kettle drum.³³⁸ The tablet consists of written text on its obverse, with a series of drawings and captions on the reverse (see fig. 54).

The drawings on this tablet can also be considered a type of map, since they graphically indicate the arrangement of cult items used in the ritual described in the text. It appears that the ziggurat plan may find its closest relative in this ritual text, if the focus of the ziggurat plan is not the high temple or the stages of the ziggurat, but rather the arrangement of the circular items outside the building. This seems particularly likely given that no structures analogous to these circles have been excavated around ziggurats, or indeed are known to have been standard parts of ziggurat architecture. This suggests these circular items were not permanent features of the ziggurat, but were rather the type of ritual item, such as tables or round containers, discussed above. The presence of non-permanent features on this plan therefore suggests that its purpose was to show the temporary arrangement of these items for a specific ritual purpose, like the placing of the sixteen loaves before the temple mentioned above, which took place outside the ziggurat.

³³⁶ *RAcc.* 16: 33, translated by Thureau-Dangin 1921: 82

³³⁷ See above pp 132-133

³³⁸ Livingstone 1986: 187-196 (Text O 175). Note that Walker & Dick (2001: 228) also compare the ritual text discussed above which features circular drawings of tables (Text A. 148) with Livingstone’s ritual text.

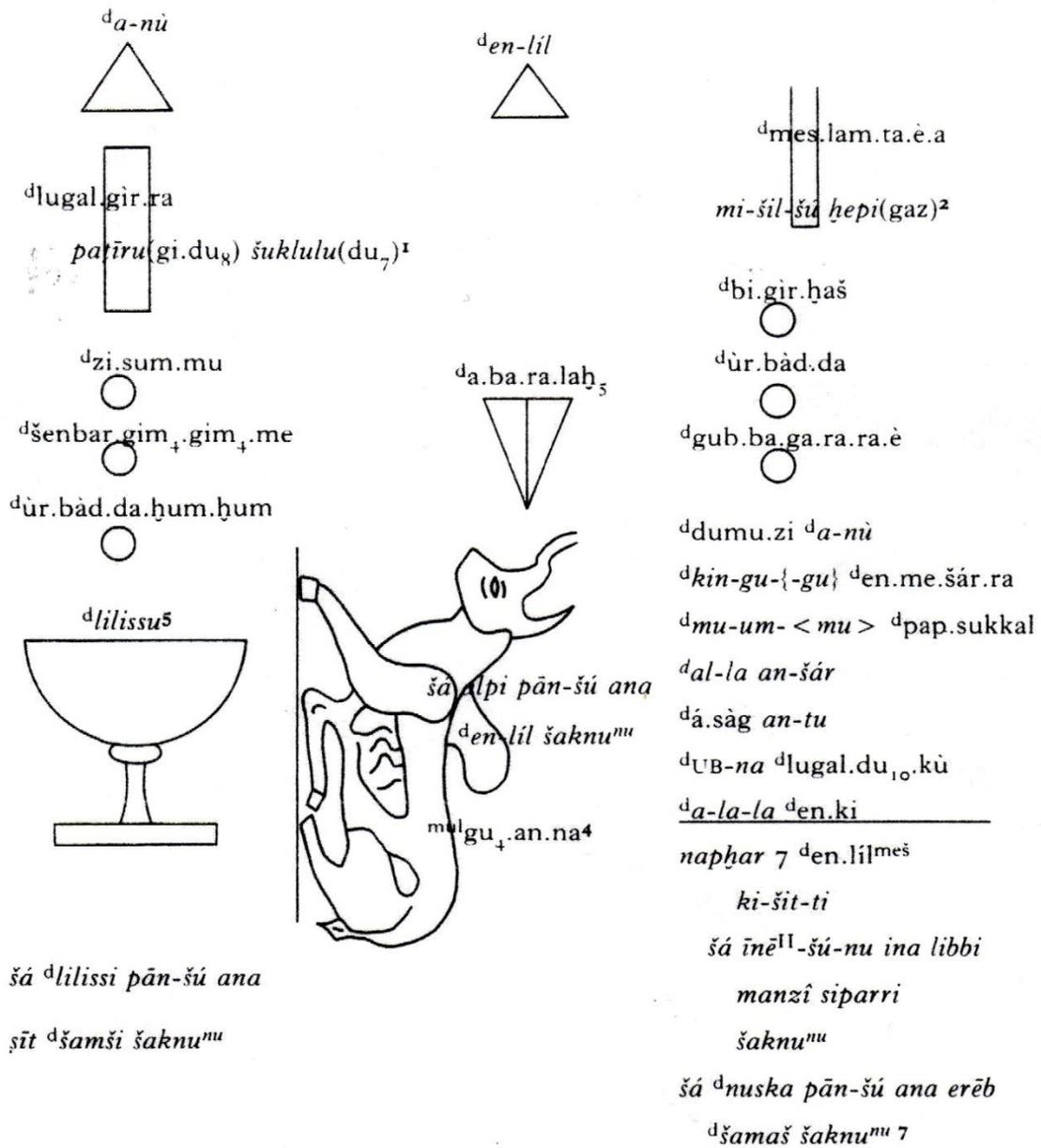


Fig. 54. Line drawing of the reverse of a tablet with a graphic ritual guide

The plan of a temple on Gudea Statue B

The plan on Gudea Statue B,³³⁹ one of only two examples in the building plan corpus carved on stone,³⁴⁰ shows a temenos enclosure with external wall niches and six entrances. The statue, carved from diorite, depicts a seated Gudea holding a tablet inscribed with a ground plan, while an inscription on the back of the statue discusses Gudea's role as architect and builder in the construction of the Eninnu temple in Lagash. The remains of a linear measuring instrument and stylus are also carved next to the plan (see fig. 55) and, although the measuring instrument on Statue B is damaged, a more well-preserved example is also found on Statue F, known as 'Gudea à la règle'.³⁴¹ The instrument is divided into ten sections of equal length, and every other section is further divided into smaller units, with six subdivisions in the first section, five in the third section, four in the fifth section, three in the seventh section, and two in the ninth section, while the sections in between remain undivided.

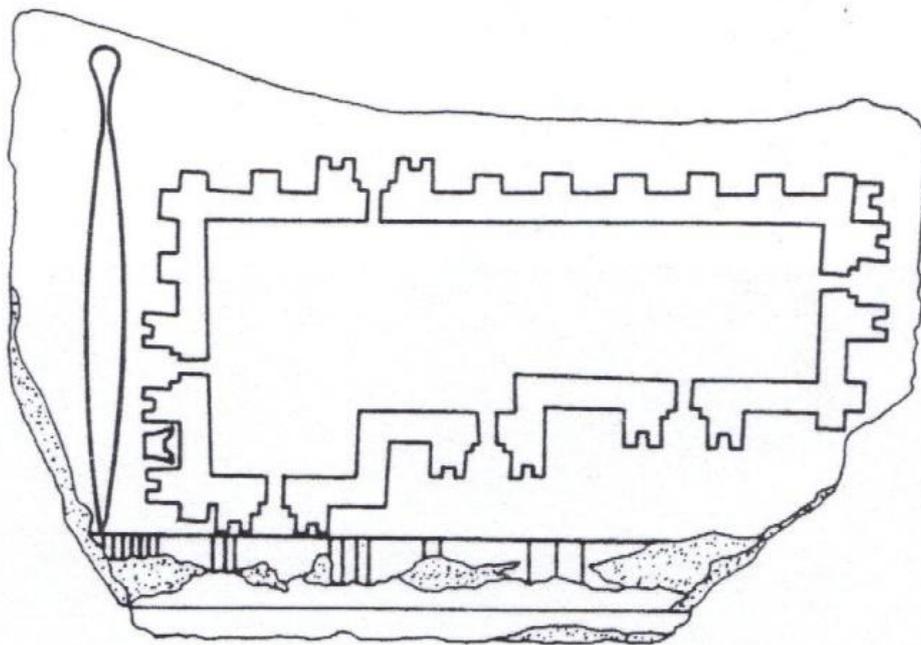


Fig. 55. Plan of a building on a tablet carved on Gudea Statue B. The partially preserved measuring instrument is carved beneath the plan, and the stylus can be seen on the left hand side

³³⁹ Louvre AO 2; diorite; length 29 cm. Provenance: Girsu, findspot unknown.

³⁴⁰ The other example, found on a Neo-Babylonian period basalt stele of Nubuchadnezzar II, is discussed below (pp. 182-185).

³⁴¹ Louvre AO 3

Powell³⁴² interprets this instrument as a representation of the cubit measurement of 30 ‘fingers’ (= 50 cm) divided into sixteen. This corresponds to standard Sumerian metrological practice, and can be interpreted in the following way: the first section represents a hand of five fingers followed by a blank finger, a finger divided into halves plus a blank finger, a finger divided into thirds plus a blank finger, a finger divided into fourths plus a blank finger, a finger divided into fifths plus a blank finger, a finger divided into sixths plus a blank finger. Various lengths have been recorded for the instrument on the statue, all of which are approximately 50 cm, but do not amount to exactly the expected length of a cubit.³⁴³ The inaccuracy here, however, is probably due to the fact that the statue was made by a sculptor who was not required to carve an exact replica of a measuring tool, and the instrument therefore represents only an approximation of its real-life counterpart with a value of 50 cm.³⁴⁴

On the plan itself each of the six entrances is framed by double projections, but it is unclear whether these elements are drawn in aerial perspective and extend outwards from the walls, or whether they are vertical towers which have been ‘flattened’,³⁴⁵ as seen in examples found in Assyrian relief where a combination of perspectives is used. Since this tablet is a representational view of a ground plan made by a sculptor rather than a working draftsman, as suggested by the inaccuracy in the length of the ‘cubit’ measuring instrument, this mixing of perspectives is perhaps not surprising. The presence of the two objects located immediately outside lower left hand wall and the upper right hand wall also lend weight to this theory, since they are usually interpreted as vertical perspective drawings of standing objects, possibly pedestals.³⁴⁶

It has been proposed by a number of scholars³⁴⁷ that the plan depicts the Eninnu temple of Ningirsu in Lagash, since the statue is dedicated to this deity and part of the inscription on the reverse is concerned with Gudea’s role in building the temple:

³⁴² 1987-1990: 462

³⁴³ Powell (1987 :462) reports a range of lengths recorded for the instrument of 504.375 mm, 498 mm and 495.9375 mm.

³⁴⁴ Powell 1987: 462.

³⁴⁵ Heisel 1993: 19. Heinrich & Seidl (1967: 31) interpret the walls of the enclosure as a purely aerial representation, but accept that the pedestal objects outside the walls may be shown in side view.

³⁴⁶ Heinrich & Seidl 1967: 31.

³⁴⁷ See, for example, Suter 2000: 58 and Bagg 2011: 556. See also Heimpel 1996 for an overview of this topic.

“He built Ningirsu’s House on ground that was as clean as Eriddu (itself). No-one was lashed by the whip or hit by the goad, no mother would beat her child. Governor, inspector, overseer, levy supervisor, (whoever) stood watching work, supervision was, in their hands, as (soft) as combed wool.³⁴⁸

The construction of the Eninnu is described in greater detail on Gudea Cylinder A,³⁴⁹ in which reference is made to the temple’s six gates. Thus, there are clear parallels between the description of the Eninnu’s six porches and the building on Gudea Statue B, and Heimpel³⁵⁰ has used the Cylinder A text to theoretically identify the gates of the temple on the plan (see fig. 56). Since the Eninnu has not been fully excavated, however, it is impossible to assess whether the plan on Statue B is an accurate representation of the temple’s layout.³⁵¹ Features such as the possible mixing of perspectives, an unusual practice in building plans from the ancient Near East,³⁵² and the inaccuracies in the measuring instrument suggest that the design represents a sculptor’s approximation of a building plan rather than an accurate blueprint.

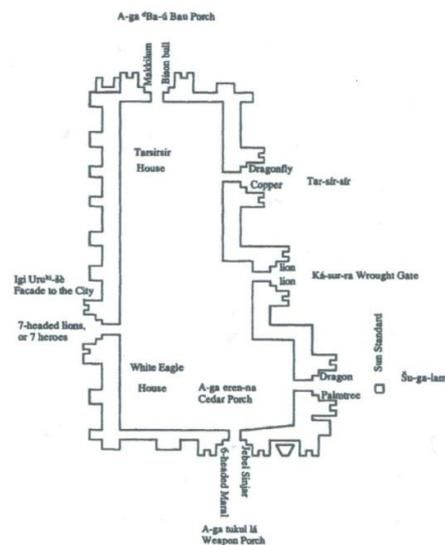


Fig. 56. A theoretical model of the gates on the Gudea B plan according to a description of the Eninnu on Gudea Cylinder A

³⁴⁸ Gudea Statue B (Louvre AO 2), col. iv, 7-19. Translated by Edzard 1997: 32

³⁴⁹ See p. 19

³⁵⁰ 1996: 21

³⁵¹ Suter (2000: 87) and Bagg (2011: 556) argue that the plan represents the Eninnu, while Dolce (2000: 368) agrees that the plan probably represents the layout of a real building and is likely to have been copied from a clay tablet, but is cautious in linking it directly to the Eninnu.

³⁵² A vertical perspective plan of a ziggurat or ziggurat stairway, which may also show some elements in aerial perspective, is discussed below (pp. 176-180). It should be noted, however, that the categorisation of this tablet as a building plan is controversial, and it is not entirely clear what the design on the tablet depicts.

Much of the interpretation of the Gudea plan centres around whether it can be linked directly to the Eninnu, or whether it was intended to represent a visual paradigm for all Gudea's building projects.³⁵³ Even with the corroborating description of the gates found in the Cylinder A inscription, without archaeological evidence providing a comprehensive ground plan of the Eninnu during this period, an identification of the plan with the Eninnu must remain hypothetical.

Within the wider context of cartography and planning in the ancient Near East, however, this plan is of greater significance in that it provides the first explicit link between graphic plans and the construction process, as described in the statue's inscription. That a design which bears the hallmarks of a typical Near Eastern building plan appears on a piece of sculpture suggests that the concept and appearance of building plans was familiar in the ancient Near East, and would have been understood as an appropriate artistic signifier for the role of architect/builder. In light of this, whether or not the plan represents the Eninnu or a generic cult building, the ground plan on Gudea Statue B is one of the most significant in the Near Eastern Corpus.

³⁵³ Suter 2000: 87, Bagg 2011: 556. Dolce (2000: 368) does not believe there is enough evidence to link the plan with the design of the Eninnu, but agrees that it probably represents a real building and is likely to have been copied from a clay original. Heisel (1993: 20) suggests the plan reflects a more abstract representation of all Gudea's buildings.

THE OLD BABYLONIAN PERIOD

Containing a total of twelve examples, the collection of Old Babylonian building plans represents the largest group in the corpus,³⁵⁴ amongst which are the first examples of plans which can be positively identified as school texts. These drawings are found on a pair of round tablets from Kish, the shape of which are closely associated with scribal training. The plans from this period, again, represent a cross section of building types, though a series of three fragments from Kish are too poorly preserved to interpret the type of structure they depict. Finally, an Old Babylonian tablet from Larsa represents possibly the only building plan from the ancient Near East which can be identified with a known structure, the palace of Nur-Adad in Larsa.

A series of school texts from Kish

Two round tablets with plans on both sides discovered at Kish and originally published by de Genouillac³⁵⁵ show simple house plans with a number of stylistic similarities, including double line walls and gaps for doorways. Only three of the four plans are inscribed, and the drawing implements used for each plan appear to differ, since some have the fine lines which result from the use of a pointed instrument while others were clearly drawn with a stylus.

The first of these tablets shows a simple five room house on its obverse which includes a series of dimensions (see fig. 57).³⁵⁶ The unit of measurement is not given, though if we assume it is the standard 50 cm cubit, the walls would be thinner than expected. If the 1 m double cubit was intended by the scribe, however, the house would be much better proportioned. In this case, a double cubit would correspond to 37 mm on the drawing, producing a scale of c. 1:270.³⁵⁷ Interestingly, the wedge-shaped line endings which form the corners of the rooms and doorways suggest this student used a stylus rather than the fine-pointed instrument used to compose the majority of Near Eastern plans.

³⁵⁴ It should be noted, however, that two 'school texts' from Kish have plans on both their obverse and reverse, and the total number of tablets with building plans from the Old Babylonian period is therefore ten.

³⁵⁵ PRAK II (1925).

³⁵⁶ Once housed in the Louvre but now missing, the catalogue number is unknown. The tablet is known to have come from Kish, however, and has a diameter of 9.8 cm (Bagg 2011: 572).

³⁵⁷ Heisel 1993: 31

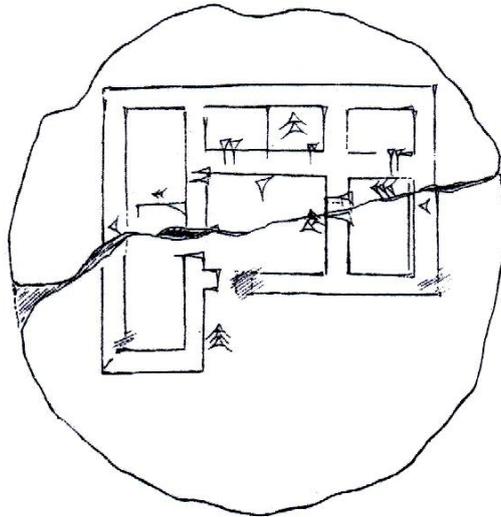


Fig. 57. Line drawing showing a school text from Kish (obverse of fig. 58)

Some of the cuneiform characters on the plan are also problematic, since it appears that the scribe was not consistent in using a single technique to indicate doorways. The main entrance to the house and the access point to the long room on the left, for example, are indicated with gaps finished with a wedge. The remaining doorways on the plan, however, are indicated with double wedges which run across the walls, as seen on the upper wall above the central room, the space on the right hand side of the same central room and the small room in the upper right hand corner. Examples of both conventions are found on a number of other plans, though a combination of these techniques does not generally appear in the same design.

It seems unlikely that these double wedges represent the number two, since the scribe had already indicated on the left and right hand external walls that the thickness of the masonry is one, and it is unlikely that the internal walls would be thicker than the external ones. Furthermore, if these double wedges represented numbers, there would be no form of access to either the upper central room or the rooms on the right hand side of the building. It can therefore only be assumed that the scribe neglected to leave spaces for these doorways and added them later with a double wedge, after he had completed the rest of the plan. This suggests that although using these two methods on the same plan was not desirable, both methods of notation were considered acceptable.

The reverse of this tablet is poorly preserved in comparison with the obverse, yet despite the extensive surface erosion it is possible to see the plan of a much more complex building

which does not contain any dimensional information (see fig. 58). In this case, the lines tend to curve and are of a less uniform thickness, perhaps because the layout of this building was more challenging to draw.

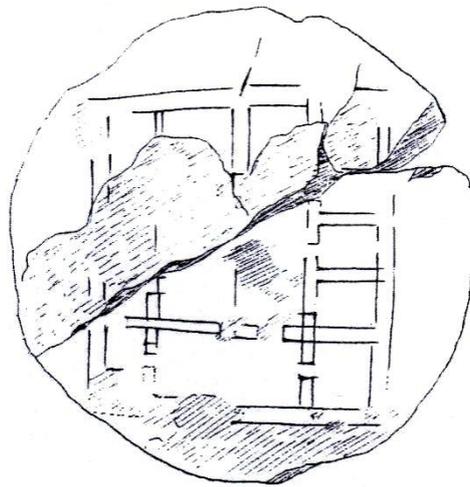


Fig. 58. A school text from Kish (reverse of fig. 57)

The second school tablet from Kish also features plans on both the obverse and reverse, the first of which shows a courtyard style house inscribed with a series of dimensions (see fig. 59).³⁵⁸ If one assumes that the corner wedges represent tens, and the single wedge in the corner is a sixty, the house would be reasonably proportioned.³⁵⁹ The drawing is also well executed, with relatively straight lines of a consistent thickness used to represent walls and a notation method of simple gaps with short projecting lines used consistently to represent the doorways.

³⁵⁸ Again, this tablet was once housed in the Louvre but now missing, and its catalogue number and dimensions are unknown. Provenance: Kish, findspot unknown.

³⁵⁹ Heinrich & Seidl 1967: 37

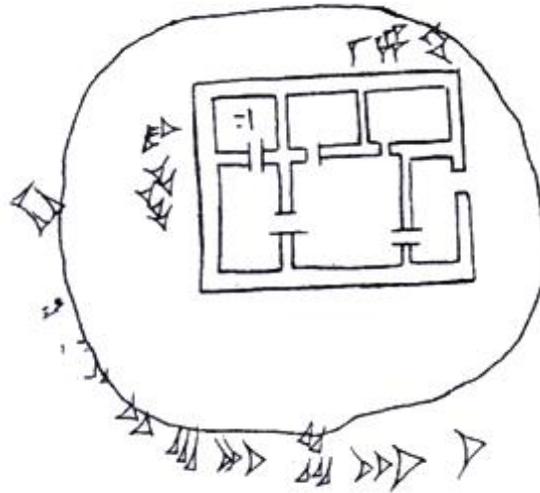


Fig. 59. Line drawing of a school text from Kish showing a house with dimensions (reverse of fig. 60)

Like the first school tablet from Kish, the drawing on the reverse of the tablet is not as well executed as its counterpart on the obverse, since one end of the house in this clearly wider than the other (see fig. 60). The inscription underneath the plan shows a series of numbers with no unit of measurement. In this case, since these numbers are not inscribed directly on the drawing, it is unclear which part of the design they refer to. As discussed elsewhere,³⁶⁰ the existence of a series of building plans which can be positively identified as school texts suggests that composing ground plans formed part of the scribal curriculum, at least during part of the Old Babylonian period in Kish. Even if the practice of technical drawing related to ground plans was a peripheral subject in scribal schools, these texts are proof that they were considered a valuable skill.

³⁶⁰ See chapter one, pp. 20-21

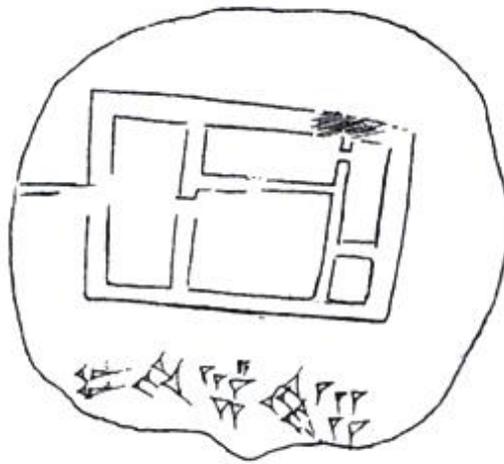


Fig. 60. A school tablet from Kish (obverse of fig. 59)

A plan of a courtyard style house

This plan from Larsa shows a typical courtyard-style house with a series of rooms arranged around a large central space (fig. 61).³⁶¹ Although the plan is carefully drawn with straight lines and ruled off gaps for doorways, it contains no measurement details or functional labels. Dolce³⁶² points out that, unusually, there are no external entrances to the building, as in the case of a plan dated to the reign of Abi-Esuḫ.³⁶³ Since the current location of this tablet is unknown and there are no archived photographs available, however, we must rely on the accuracy of Parrot's line drawing. This clearly shows the upper wall ending near the left hand corner with a ruled off line, which suggests the presence of a doorway. It appears that there is some surface damage to the tablet in this corner, and it is therefore likely that an entrance here is no longer visible.

³⁶¹ The location of this tablet is not given in its original publication by Parrot (1968: 155-157), though it is listed as probably the Louvre by Dolce (2000: 376) and Bagg (2011: 572), who both also give the excavation number T 139 and a provenance of Larsa. The catalogue number and dimensions of the tablet are unknown.

³⁶² 2000: 376.

³⁶³ See pp. 158-161

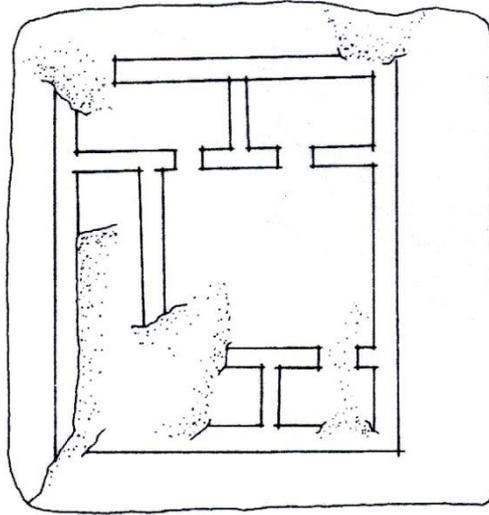


Fig. 61. Line drawing showing a tablet with a plan of a courtyard style house

It can be assumed that the large central area of the house, if it can be interpreted as a courtyard, was probably uncovered. Since ground plans do not have the capacity to show this type of detail, however, any further interpretation of this space is not possible. The size of the design compared to the shape of the tablet is also unusual in this example, since the plan does not cover the available surface of the tablet. Though the disparity between the drawing and tablet size are not as extreme as the Neo-Sumerian example of a house plan from Umma,³⁶⁴ this may suggest the scribe was working with a specific set of proportions in mind. Though the tablet does not contain any dimensions or written information, its use as a planning tool cannot be ruled out; it may have been drawn to simply to apportion the available space to particular rooms, which were then measured on site.

A plan of part of the palace of Nur-Adad?

This unprovenanced tablet, now housed in the Schøyen Collection, bears an unlabelled plan of a building with a series of halls and rooms arranged around a large central courtyard (fig. 62).³⁶⁵ Interestingly, although the scribe depicted the doors using the standard gap method, in a number of places the ends of the walls are not ruled off, a feature not found on any other Mesopotamian building plan. Despite the sketchy quality of the drawing, however, as seen in

³⁶⁴ See pp. 129-131

³⁶⁵ Schøyen Collection MS 3031, clay, 12 x 8.8 x 2.5 cm. Provenance: Larsa? Findspot unknown.

the lack of uniformity in wall thickness and the curved quality of the lines, the layout of the building is clear and the arrangement of rooms easy to follow.

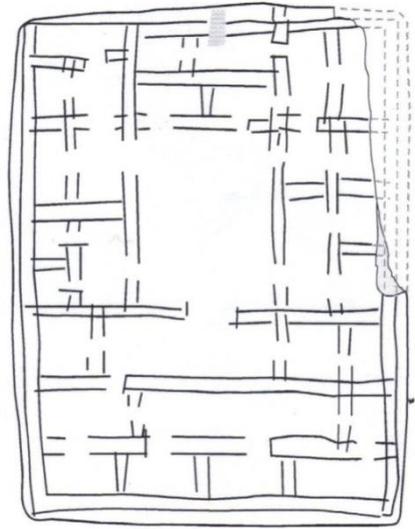


Fig. 62. Ground plan of a large building with a central courtyard

The design on the tablet has been identified by Friberg³⁶⁶ as a plan of part of the plan of Nur-Adad at Larsa, based on a number of similarities between the sketch and the layout of the palace, in addition to the fact that the tablet's mauve coloured clay is typical of those discovered at the site. A close comparison between the design on the tablet and the ground plan of the excavated building, however, reveals many of these similarities to be somewhat superficial (fig. 63).

It is clear that a number of access points found on the ancient plan, for example, are not replicated in the layout of the excavated palace, such as those located in the two rows of chambers on the southeast side of the central courtyard. Furthermore, though there are some similarities between the shape and layout of the suites of rooms and halls drawn on the ancient plan and those of the palace, there are also significant differences seen in the design of certain sections. The rooms and passages around the throne room located on the southwest side of the palace courtyard behind a thick wall, for example, are clearly arranged in four rows, while those on the sketch number only three. Similarly, there are four rows of rooms

³⁶⁶ 2007: 229

which run parallel to the northwest side of the palace courtyard, with the result that this large space is not completely central to the building, as it is presented on the ancient plan. Therefore, despite a number of similarities between the ground plan of the palace and the design inscribed on this tablet which may draw certain comparisons, this building plan cannot be positively identified with the remains of the palace at Larsa.

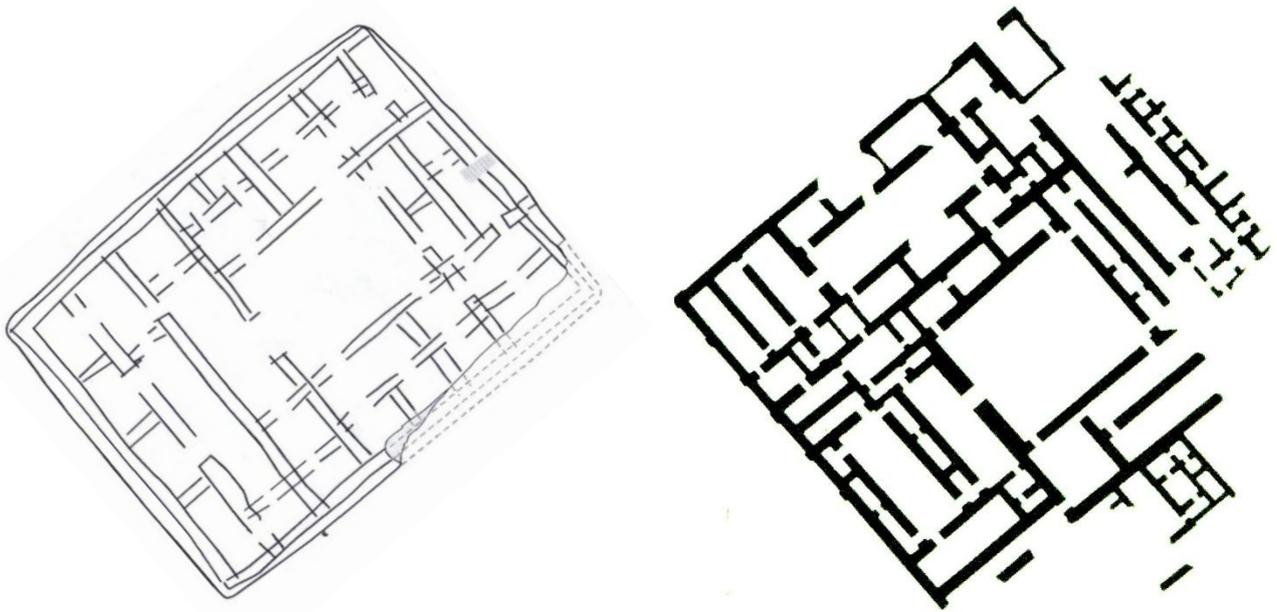


Fig. 63. A comparison between an Old Babylonian plan of a large building and the Palace of Nur-Adad at Larsa. The ancient tablet has been rotated to match the orientation of the ground plan of the palace

A plan of a single room temple

This tablet shows a plan of a single room temple with a series of three shrines, or cellae, located to the left hand side of the main building (see fig. 64).³⁶⁷ Although the plan contains no measurement information, a poorly preserved caption in the middle of the tablet, written over two lines, reads *a-šèr-tú*, ‘sanctuary’.³⁶⁸ The plan appears to have been drawn free-

³⁶⁷ BM 132254, clay, 11.4 x 8.3 cm. Provenance and findspot unknown. Heisel (1993: 40) lists the tablet as possibly Middle or Late Babylonian, though the British Museum online catalogue (accessed 01/09/2010) lists the object as Old Babylonian, and I follow their dating here.

³⁶⁸ Wiseman 1972: 145.

handed using a combination of double line walls for the rooms on the left hand side of the tablet and part of the main temple, while the purpose of a series of single lines on the right hand side remains unclear. It is possible that either these lines represent a particular architectural feature for which the scribe found a single line the most appropriate graphic analogy, or the plan is unfinished.

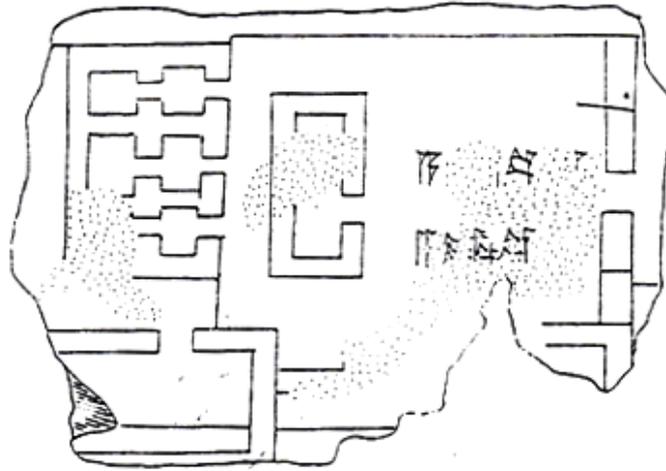


Fig. 64. Line drawing of a single room temple with a series of cellae on the left hand side

Wiseman³⁶⁹ and Dolce³⁷⁰ believe this plan is also likely to be a school exercise, in light of the sketchy quality of the drawing and the fact that the plan spills over onto the edge of the tablet.³⁷¹ There are numerous examples of plans which are poorly drawn but are not necessarily school exercises, however the presence of the word ‘sanctuary’ does suggest it may have been a practice exercise, since scribes either tend to not provide a functional label for the building on the plan, or include a caption which refers to the specific name of the

³⁶⁹ 1972: 146

³⁷⁰ 2000: 379

³⁷¹ Though the school tablets from Kish have been identified as training exercises largely on the basis of their round shape, it should be pointed out that circular tablets are not a prerequisite for school texts. Also note that the John Rylands Library plan, which is not generally considered a school text, is also inscribed on one edge.

structure shown, as in the cases of the ‘House in Sippar-Jahrurum’ or the ‘House of Puta’ plans, discussed above.³⁷²

The layout of the building has been compared to a number of known types, such as the free-standing ‘knickachstempel’ type with an additional annexe formed by the rooms to the left of the main temple,³⁷³ which are similar in structure to a series of Late Kassite rooms on the northwest wall of the temenos at Ur.³⁷⁴ If the plan does represent a school exercise, however, it can be assumed that this should represent a ‘typical’ building layout, like the standard ‘courtyard-style’ houses found on the round school texts from Kish, which does not appear to be the case in this example. It is also therefore possible that the plan represents an amalgam of two different building types on the same tablet, and that the scribe was practicing drawing techniques such as the double-line wall in different shapes and in varying levels of complexity, providing perhaps the strongest indicator that this plan represents a school exercise.

A plan of a building in Sippar- Jahrurum

This plan, now in the British Museum (fig. 65),³⁷⁵ shows a complex building labelled with a series of room functions. An additional inscription on the reverse contains the caption *uṣurti bīt Sippar-Jahrurum*,³⁷⁶ ‘Design of a house in Sippar-Jahrurum’, a suburb of Sippar, which also dates the plan to the year 3 + [x] of Abi-Esuḥ (1711-1684).³⁷⁷ The building contains four rows of rooms drawn using the standard double-line method, though in this example the doorways are indicated with short pairs of dashes which cut across the walls rather than the more common gap in the masonry.

³⁷² See the Sippar-Jahrurum plan pp. 158-161 and the House of Puta plan 115-117

³⁷³ Bagg 2011: 555

³⁷⁴ Wiseman 1972: 146, who also compares this suite of rooms to The Babylonian temple of Ishtar of Agade at Babylon.

³⁷⁵ BM 86394, clay, 8 x 6 cm. Provenance and findspot unknown.

³⁷⁶ See pp. 18-21 for a discussion of terminology related to plans.

³⁷⁷ Heinrich & Seidl 1967: 35.

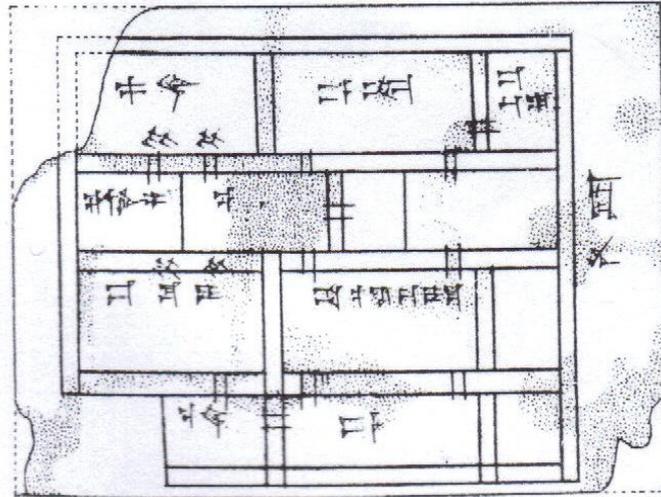


Fig. 65. Line drawing of a plan of a house in Sippar- Jährurum

Eight of the eleven rooms in the building are labelled, the first in the lower left-hand corner inscribed with the caption *pa-paḥ*, ‘cella’ or ‘sanctuary’, the same term found on the plan of a temple from the Akkadian period.³⁷⁸ A doorway on the right hand wall of this room leads to a second room labelled *ká*, ‘gate’. The room immediately to the right and a room directly above are unlabelled and also appear to be inaccessible. The left hand room in the lower middle row, accessed by a single door from the first room, is designated *é-šu-i*, ‘barber’s’. The large central room is labelled *ša parāsišu*, translated by Von Soden as ‘that of his decision’, a term which is not well-understood.³⁷⁹ This large room has four doors, and can be accessed from a number of other rooms.

The third row contains only two rooms, only one of which is labelled, in this case with the word *eširtum*, ‘sanctuary’.³⁸⁰ This term, in addition to the presence of a *papaḥ* in rooms one and nine, suggests an obvious cultic context for the building. Both rooms seven and eight can be accessed by the large room in the centre and there is a single door between them. Both these rooms in the upper middle row, however, are divided by a single line, roughly a third of the way along their lengths. It is unclear what these lines refer to, although it has been

³⁷⁸ See pp. 125-129

³⁷⁹ According to Heinrich & Seidl (1967: 37) this translation was informally communicated to them by Von Soden. This phrase does not appear on any other plan in the corpus or, to my knowledge, anywhere else in the context of religious or secular architecture.

³⁸⁰ Heinrich & Seidl 1967: 36

suggested they represent platforms³⁸¹ or preliminary lines meant to indicate partition walls.³⁸² If they were intended to represent platforms, it appears the scribe selected a particularly ambiguous graphic marker, and it seems more likely that these lines represent not yet constructed walls, the locations of which are indicated by these single lines.

Finally, in the upper row on the plan, the left hand room contains another *papaḥ*, ‘shrine’, adjacent to a *ká gibil*, ‘new gate’. Although a caption is present in the room located in the upper right hand corner, this cannot be deciphered satisfactorily. Unusually, the scribe also included a label to the outside of the exterior right hand wall which reads *silá daḡal*, ‘wide street’. Examples of building plans which include additional information about the plot on which the building stands are virtually unknown in the ancient Near East, and in this case the label probably served primarily to orientate the building.

The room designations given on the plan suggest the function of the building was cultic, though this temple type of layout is not attested in the ancient Near East. The name of the building given on the reverse of the tablet, *bīt Sippar-Jahrurum*, would also initially suggest the design represents a residential house, since temples were usually listed with their names.³⁸³ As discussed above in relation to Akkadian plan of a temple,³⁸⁴ there are examples of a *papaḥ* found in private houses. In the case of both examples, however, the presence of an *eširtum* and the lack of living space suggest that an interpretation of these plans as temples seems most appropriate. Additionally, the presence of a ‘barber’s’ would be incongruous in the context of a private house, but could theoretically be found in a temple.³⁸⁵

Another unusual feature of the building is the lack of external entrances, since none are indicated graphically on the plan. This has led Wiseman³⁸⁶ to interpret the design as a school exercise, though Heisel³⁸⁷ believes this may be an indication that the plan was simply drawn hastily, suggested by other apparent errors such as the ‘missing corner’ on the lower left hand side of the building, the unlabelled rooms, and the inaccessible areas on the lower right hand side of the plan.

³⁸¹ Heinrich & Seidl 1967: 36, followed by Bagg 2011: 553.

³⁸² Heisel 1993: 29, an interpretation also followed by Dolce 2000: 338.

³⁸³ Heinrich & Seidl 1967: 37. The word *bīt* can mean either house or temple, and does not necessarily mean residential dwelling in this context (cf. CAD ‘B’ p. 282).

³⁸⁴ See pp. 125-128

³⁸⁵ Heinrich & Seidl 1967: 37. Maybe try and find some examples of this?

³⁸⁶ 1972: 145

³⁸⁷ 1993: 29

It is certainly true that this is not the most accurately drawn plan, as evidenced by the inconsistent overlapping of the lines on both the internal and external walls. It seems likely, however, that the rooms labelled 'gate' and 'new gate' provided the external access points, which the scribe chose to indicate verbally rather than graphically. There are numerous examples throughout the corpus where different features are indicated with either a graphic notation or a written label, and there are even cases where both methods are used on the same plan.³⁸⁸ Therefore, although unusual, it would not be entirely unlikely for the scribe to indicate internal doorways with double dashes and external access points with written labels.

Although Heinrich & Seidl³⁸⁹ consider the lack of an entrance on the sila daḡal side problematic, the scribe probably included the name of this street in order to orientate the structure, and not necessarily because this was the side from which the building was primarily accessed. Since the scribe did not include any other information about the space around the other sides of the house, it is conceivable that the temple could have been accessed from streets located on its long sides, particularly since these are the sides on which the external access points appear to be located. The 'missing' corner of the building seen on the lower left hand side is also unusual, though this feature may be an indication that there was something external to the building which restricted the shape of its layout, rather than an error on the part of the scribe. If the single lines in rooms seven and eight are preliminary wall markers, the purpose of the drawing is likely to have been used in planning alterations to an already constructed building.

Three fragments of plans from Kish

These fragments, all originally published by de Genouillac in *Premières Recherches archéologiques à Kich*³⁹⁰ clearly show the remains of ground plans, but are unfortunately too incomplete to fully interpret beyond a few superficial observations. The first of these fragments (fig. 66) shows the corner of a building drawn free-handed with double line walls and gaps left for doorways. The cuneiform signs present outside the left hand wall and

³⁸⁸ See for example the rolling mills plan from Nippur pp. 132-133

³⁸⁹ 1967: 35

³⁹⁰ Published in 1925. In all cases the current location of these fragments is unknown. They are assumed to have been at one time housed in the collections of the Louvre, but now appear to be lost. There are no photographs of the fragments available, and any interpretation must therefore rely on de Genouillac's autograph copies. They clearly display many of the hallmarks of Near Eastern ground plans, however, and are included here for completeness.

written on the wall itself appear to be numbers, though without any unit of measurement or qualifying phrases, it can only be tentatively assumed that they refer to wall thicknesses and an external length.

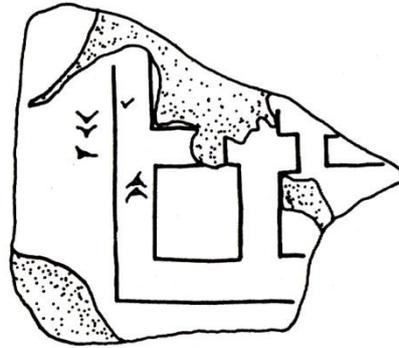


Fig. 66. Line drawing of a ground plan fragment from Kish

The second fragment (fig. 67) shows a series of double line walls with simple gap doorways, accompanied by cuneiform signs which also appear to be measurements. Again, however, without any additional text it is difficult to fully interpret these numbers, though they may indicate a wall length and an internal area measurement. An interesting feature on this fragment can be seen on the preserved wall section in the middle of the tablet, where the external line of the wall turns at a 90° angle in order to create a thicker section.

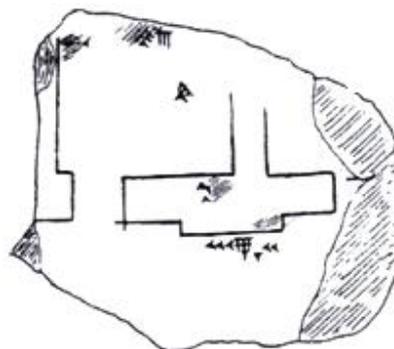


Fig. 67. Line drawing of a fragment from Kish

A similar feature can be seen on the third de Genouillac tablet (fig. 68), a very small and poorly preserved unlabelled fragment, in this case on the upper side of the horizontal wall at the top. It is unclear why the walls have been drawn this way, though since the angled corners at each end of these larger sections suggest the increased thickness of the walls is deliberate, these sections may represent the remains of the niche pattern typically found in religious architecture. Due to the very fragmentary nature of these tablets it is impossible to interpret these plans any further, though the presence of the same changing wall thickness on the pieces shown in figs. 66 and 67 suggest they may have originally belonged to the same tablet.

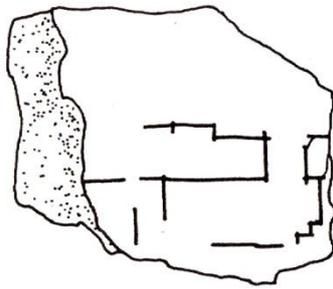


Fig. 68. Line drawing of a building plan fragment from Kish

THE MIDDLE BABYLONIAN PERIOD

Only one ground plan in the corpus dates to the Middle Babylonian period, showing a highly schematised plan of a private courtyard-style house. It is unclear why the Middle Babylonian period is so under-represented in the building plan corpus, though since the number of examples dated to each period is limited to fewer than ten tablets, it is unlikely that the lack of building plan finds from the Middle Babylonian period represents a statistical anomaly rather than an accident of preservation.

A house plan in the National Museum of Iraq

This partially preserved plan shows a building with a large central space, presumably a courtyard, surrounded by a series of corridors and smaller rooms (see fig. 69).³⁹¹ Unusually, the scribe used single lines to represent the walls rather than the more typical double line, making the spatial arrangement of the building somewhat unclear since it is difficult to understand how the walls intersect. The scribe also used simple parallel dashes to represent doorways, which in two cases on the lower half of the plan extend across two walls, presumably to indicate a set of doors located directly opposite each other.

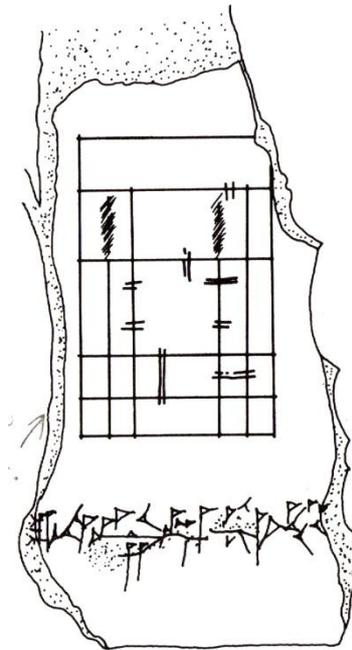


Fig. 69. A single line plan of a courtyard-style house

³⁹¹ National Museum of Baghdad, IM 44036; clay. Provenance and dimensions unknown.

A number of rooms do not have access points, including four small square rooms in the lower left hand corner, two in the lower right hand corner and two long corridors located either side of the central courtyard, adjacent to the external walls. There is also no external entrance to the building, possibly because the scribe was only concerned with the arrangement of the internal doorways. The scribe also erased two walls on the upper part of the plan, where the lines appear to have extended too far into another section. A single line inscription is partially preserved underneath the plan, though it is unfortunately not legible enough to allow for a satisfactory translation.

It is clear from the Near Eastern ground plan corpus that the double line was the preferred method of representing walls graphically, since it makes the allocation of space required for the walls clearer and the relationship between internal spaces easier for the viewer to follow. Since the scribe did not include measurements on this plan, it seems that he was primarily concerned with the internal layout of the building and the location of certain doors, so perhaps in this case the more complex double-line wall method was considered unnecessary.

THE LATE BABYLONIAN PERIOD

After the Old Babylonian collection, the Late Babylonian period represents the second largest group of building plans in the corpus, with a total of seven ground plans and one vertical perspective plan of a ziggurat or ziggurat stairway. None of the plans can be firmly identified as representations of public buildings, and the examples in this small collection are heavily weighted towards the cultic, with six of the eight plans illustrating religious buildings and only two representing private houses.³⁹²

A single line plan showing a combination of building types

A partially preserved plan in the British Museum³⁹³ shows the remains of a building with an unusual spatial arrangement, drawn with single lines (see fig. 70). In this case the plan appears on the reverse of the tablet, while the obverse is inscribed with an extract from the lexical series *Ḫar-ra = ḫubullu*. Since this text was regularly used in scribal training, it seems likely that this plan is another example of a school tablet.³⁹⁴ The arrangement of the rooms is unusual and many of them are narrower at one end, probably because the plan was sketched free-handed. There is also no access point between the rooms on the upper third of the plan and those on the lower third, suggesting that either the scribe neglected to add doorways here or the plan represents two adjacent properties.

³⁹² It must be noted however, that two of these cult plans appear on a single tablet, and a further two appear on a single piece of sculpture, the stele of Nebuchanezzar II, discussed below.

³⁹³ British Museum BM 46740, clay, 5.2 x 6 cm. No date or provenance is given for the tablet in the British Museum online catalogue (accessed 20/04/2012). Wiseman (1972: 145) dates the tablet to the Neo-Babylonian period, followed by Heisel (1993: 40) and Bagg (2011: 555).

³⁹⁴ Wiseman 1972: 145; Bagg 2011: 555.

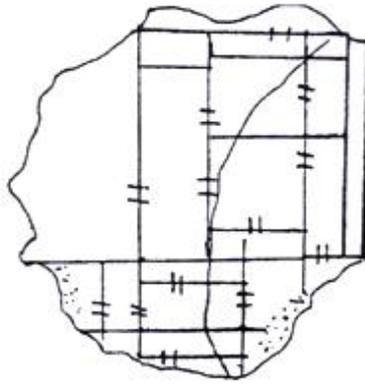


Fig. 70. Line drawing of a plan with a possible combination of buildings

The scribe used non-wedge shaped line pairs to indicate doors, and in most cases the bases of these pairs extend from the line of the wall rather than crossing through them. The purpose of the long, curved line running from the bottom left hand corner of the plan to the upper left hand corner is unclear; it may, as Heisel³⁹⁵ points out, suggest that the drawing is invalid, though how this should be understood in the context of a scribal exercise is unclear.

Due to the fragmentary nature of the tablet and the absence of measurements or captions, interpreting the type of building depicted here is problematic. Although described as a ‘courtyard style’ house by Heisel,³⁹⁶ the number and combination of rooms and the arrangement of access points suggests this is unlikely. The school texts from Kish all clearly show a single house on each plan, but the other possible school text in the corpus, an Old Babylonian temple plan, also shows what appears to be an amalgamation of different building types, in that case a single room temple with the addition of a series of cellae on one side. If both these tablets are school texts, it is quite possible that the trainee scribes who composed them were practising drawing different architectural elements in plan format, and that each plan shows a combination of building types and spatial layouts rather than a single, coherent structure. This would also explain the dividing line two thirds of the way up this tablet, from which there are no access points to the next section, if we assume that the plan does not represent adjacent buildings.

³⁹⁵ 1993: 40

³⁹⁶ 1993: 40

A fragmentary plan of a palatial house

Three fragments of a tablet preserved in Berlin³⁹⁷ can be reconstructed to show an almost complete plan of what is probably a palatial house with a series of rooms based around a large central area (see fig. 71). Though the plan is relatively well-executed, the walls are not of a uniform thickness throughout the design, leading Heinrich and Seidl³⁹⁸ to state that the fragment seen on the left hand side does not belong to the original tablet. Given that walls of different thicknesses are found on each of the three fragments, however, and the similarities in palaeography, drawing style and the system of annotation found on all three fragments, it can be assumed that these pieces are almost certainly from the same tablet.³⁹⁹

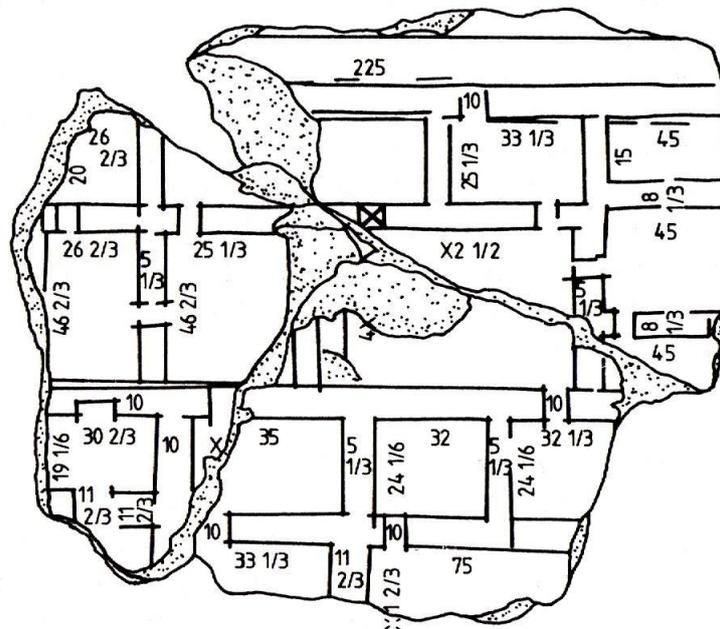


Fig. 71. Three fragments of a ground plan showing a large building

The scribe included a series of detailed dimensions on the plan in whole numbers and fractions, though he did not add the unit of measurement used. Dimensions are given for wall lengths, some door widths and wall thicknesses, and are written next to the element they refer

³⁹⁷ Berlin VAT 413, clay, Reconstructed to 12 x 10 cm. Borhardt (1888: 129-131), originally added a fourth fragment to his reconstruction, but this piece has since been identified as a fragment showing the Arahtu Canal (discussed on pp. 107-109).

³⁹⁸ 1967: 37

³⁹⁹ This is the most common interpretation; see Hesiel 1993: 44; Schmid 1995: 138 and Bagg 2011: 548

to. In the case of the walls, the number is oriented towards the relevant piece of masonry, door widths are written between the gaps which indicate them and wall thicknesses are written inside the double-lines which represent them. The total length of the building, 225, is written outside the uppermost external wall.⁴⁰⁰ A doorway located on the upper wall next to the large central space is marked with a cross, though it is unclear whether this symbol indicates an access point which was planned and then abandoned, or whether the scribe was marking the location of a new door.⁴⁰¹

Since the scribe did not include a unit of measurement, assessing the scale of the building and its true proportions is problematic. Assuming the unit used is the cubit, the walls would be unusually thin and the rooms overly large, even for a palatial house.⁴⁰² The detailed measurements, including the use of fractions, suggest the plan may have been used as a pre-construction tool. This does not necessarily mean the plan was to be consulted on site, but perhaps rather that the very specific measurements were needed because the building had to be constructed on a known plot, the size of which was used by the scribe to arrange the building's spatial layout. This would suggest that the doorway with a cross through it was a proposed entrance which the scribe then abandoned, since it is unlikely that the simple removal of a single doorway would necessitate the composition of a complete building plan.

A double sided plan in the British Museum

This tablet shows a roughly sketched floor plan on each side, drawn using single line walls and double wedge doorways.⁴⁰³ Although the surface of the tablet is badly eroded in places, a number of dimensions can be read on both plans. The obverse of the tablet shows a building with a large central area surrounded by a single row of rooms on three sides and a double row located above the central space (see fig. 72 and Plate V). As on a number of other plans, the scribe drew the walls with a fine pointed instrument, in this case apparently free-handed, and then used a stylus to draw double wedges to represent access points.

⁴⁰⁰ Heinrich & Seidl 1967: 40

⁴⁰¹ Heisel 1993: 44

⁴⁰² See Heinrich & Seidl 1967: 39 40 and Heisel 1993: 44, 46

⁴⁰³ British Museum BM 80883, clay, 9.5 x 6.9 cm. The provenance uncertain as the tablet was purchased from Selim Homsy & Co. in 1889, but is listed as possibly Sippar in the British Museum catalogue (accessed 12/04/2012). The tablet has been repaired from a series of fragments. As mentioned above (see footnote), although dated to the Middle Babylonian by Heisel (1993: 34), followed by Allinger-Csollich (1998: 231), the tablet is listed as Late Babylonian in the British Museum catalogue, and I follow their dating here.

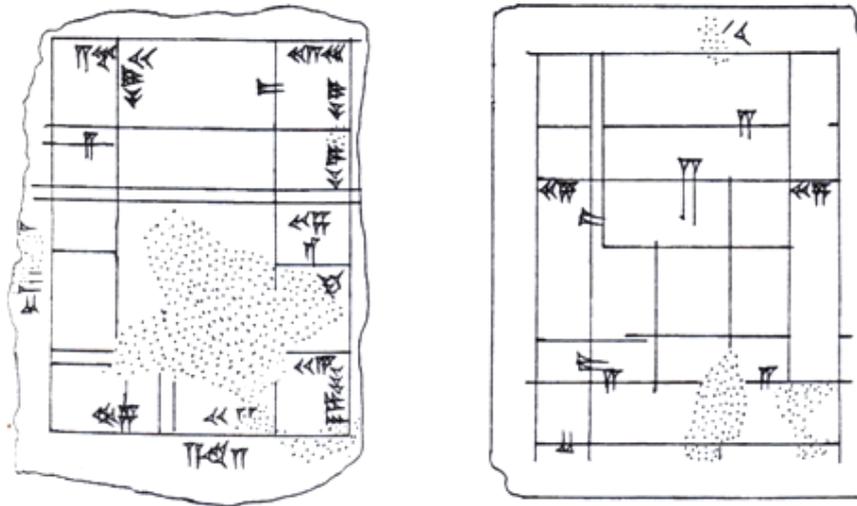


Fig. 72. Obverse (left) and reverse (right) of Late Babylonian tablet BM 80083

The plan on the reverse is drawn in the same style as the plan on the obverse, though in this building the rooms are of a more uniform size (see fig. 72).⁴⁰⁴ The scribe added a number of measurements to both plans, all written directly next to the element they refer to, but did not include the unit of measurement. Allinger-Csollich⁴⁰⁵ believes these plans may represent temples B and C in the Ezida complex in Borsippa. It is possible to see some similarities between these plans and the layout of temples B and C, and in some cases the numbers given on the plans correspond roughly to the brick lengths of certain walls found in the excavated buildings⁴⁰⁶ (see fig. 73).

Yet while there are some superficial similarities between the plans on BM 80083 and the Ezida temples, there are a number of discrepancies between these sketches and the arrangements of the temple foundations which suggest they do not represent the same buildings. A number of measurements found on the plan on the obverse of BM 80083 do not correspond to the dimensions of temple B, for example, and the spatial differences between temple C and the plan on the reverse are even more apparent. Furthermore, Allinger-

⁴⁰⁴ Picture from Heisel 1993: 35. Due to the poor surface condition of the tablet it is difficult to follow the arrangement of rooms in this plan, but it is clear that the spatial arrangement is different enough from the plan on the obverse to assume that they are not variants of the same building.

⁴⁰⁵ 1998: 231-234

⁴⁰⁶ Allinger-Csollich 1998: 233

Csollich⁴⁰⁷ cannot explain the presence of the line with the large double wedge on the reverse plan (fig. 72), which cuts straight across courtyard D on the plan of temple C. This line undoubtedly represents a wall, and the double wedge is almost certainly a doorway. Although this double wedge is larger than the others on the plan, since the scribe did not make all the double wedges of uniform size there is no reason to assume this is not an access point. It is highly unlikely that the scribe would use the same graphic symbol to represent a wall and doorway, in this case a single line and a double wedge, to represent a different architectural feature within the same plan.

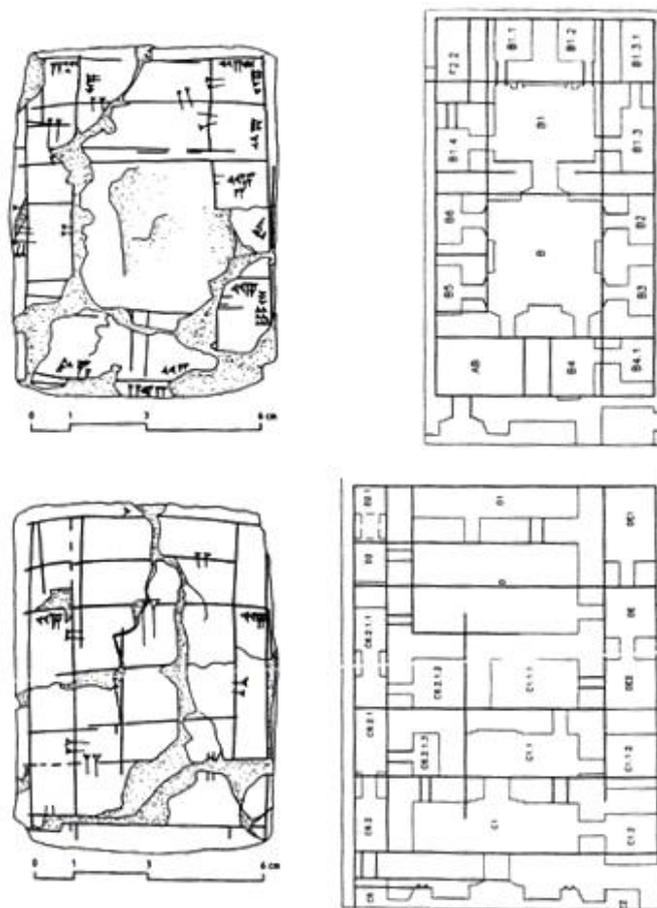


Fig. 73. A comparison between the obverse and reverse of BM 80083 and temples B and C in the Neo-Babylonian version of the Ezida complex

⁴⁰⁷ 1998: 234

Allinger-Csollich⁴⁰⁸ seeks to resolve these problems by suggesting that these plans represent an earlier stage of the temples rather than the Neo-Babylonian versions, on which much of his analysis is based.⁴⁰⁹ Even in this case, however, without a more explicit link between the plans and the temples, such as an identifying inscription on the tablet, and given that this tablet probably comes from Sippar and the Ezida is located in Borsippa, there is very little reason to link the plans to these temples. Given the layout of the plans and the number of rooms contained in each, it is likely that they represent parts of a large building such as a temple or palace which, for the moment, must remain unidentified.

A Late Babylonian ground plan with a brick grid

A series of fragments from Sippar in the British Museum⁴¹⁰ have been reconstructed to show a plan of a large building drawn with the aid of a brick grid (see fig. 74). At 23 x 31 cm, this tablet is the largest preserved building plan in the corpus. The scribe included a number of dimensions and room designations which, in addition to the grid which allowed him to reproduce complex architectural features such as the niches on the outer walls,⁴¹¹ make this one of the most detailed plans in the corpus.

The external wall niches and sequence of rooms suggest the structure depicted is a religious building of the ‘double’ temple type, and a number of spatial combinations found on the plan are comparable to contemporary cult buildings found at both Ur and Borsippa.⁴¹² Most of the preserved rooms are inscribed with dimensions, given in kùš, with labels oriented towards the relevant wall. Unusually, the scribe also clarified these measurements with the words ‘length’ and ‘width’, even though it has been shown that plans tend to include either oriented writing or verbal qualifiers, but rarely both. In some cases, a room designation was also added, for

⁴⁰⁸ 1998: 234

⁴⁰⁹ Again, however, he tentatively dates the tablet to the Middle Babylonian period, while I follow the British Museum’s dating of Late Babylonian. It is theoretically possible, however, that the tablet belongs to a very early date in the Late Babylonian period (c. 1000 BCE), which would place it before the historical Neo-Babylonian period.

⁴¹⁰ British Museum BM 68841+ 68842 + 68843 + 68845 + 83002, clay, reconstructed to 23 x 31 cm. Provenance: probably Sippar.

⁴¹¹ Heisel 1993: 46. Also compare with the Ur III temple drawing which doesn’t reproduce the niches like this.

⁴¹² Heinrich & Seidl 1967: 42. For an example of a ‘double’ temple, see the excavation plan of temple B in the Ezida, fig. 36.

example in room seven, inscribed with '13 kùš length west room' and in the case of entrances, the word 'gate' was added.⁴¹³

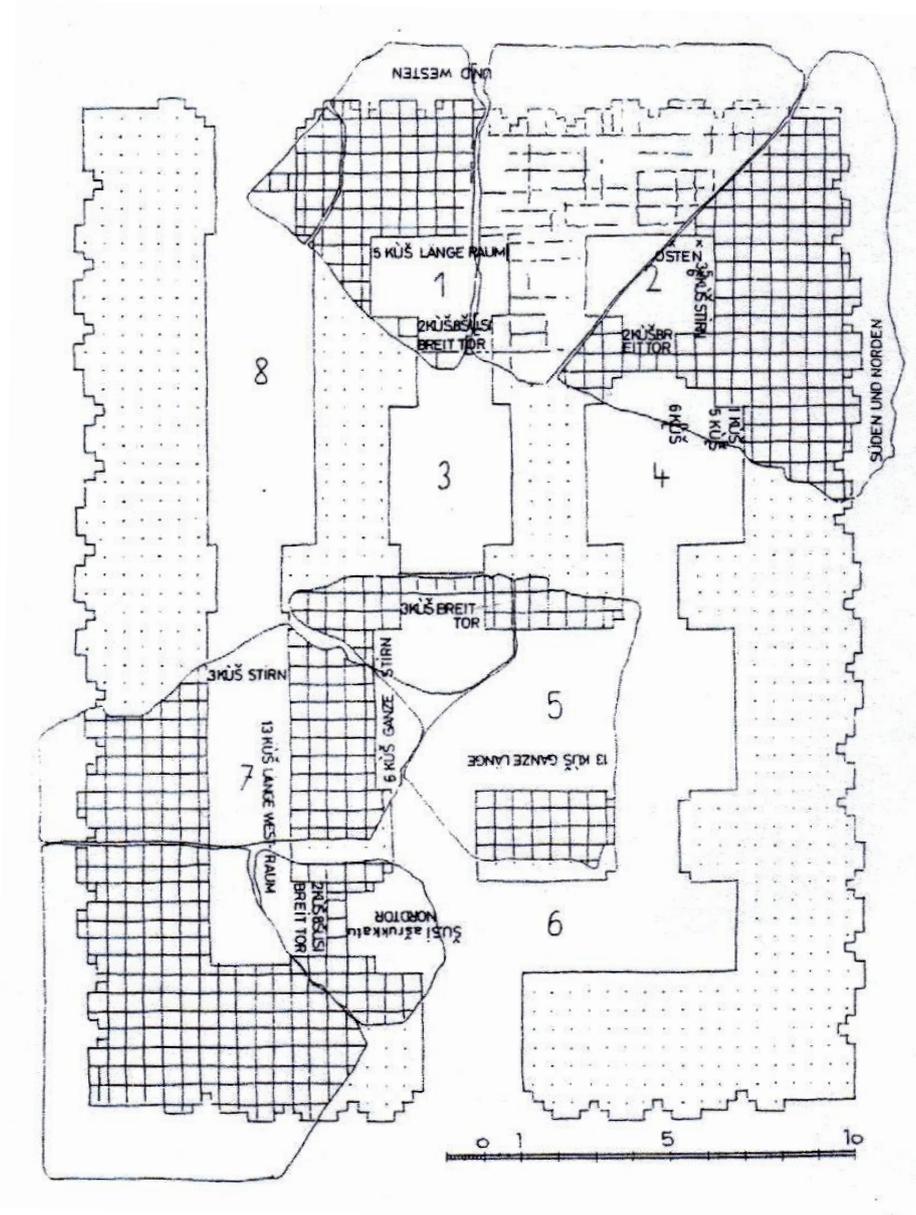


Fig. 74. Line drawing showing a fragmentary temple plan with a brick grid

⁴¹³ Heinrich & Seidl 1967: 42

The plan is also oriented on the vertical access with the labels ‘south and north’, and the shorter side at the top of the plan with the word ‘west’. However, since both ‘south and north’ appear on the wall on the right hand side of the building, this would indicate that north is pointing towards the top of the plan, and south towards the bottom. In this case, the short side of the building at the top of the plan in fig. 73 should be regarded as the north side, and the side at the bottom of the plan must be the south side.⁴¹⁴ There is some surface erosion to the fragment adjacent to the one on which ‘west’ is inscribed, and we can assume that the scribe had also written ‘east’ here. We can also conclude that ‘west’ refers to the long edge of the plan on the left hand side of our illustration, and the missing ‘east’ refers to the right hand side. This interpretation is confirmed by the label ‘east’ in room two, on the right hand side of the plan, which corresponds to the eastern side according to the scribe’s system of orientation. The only inconsistency in this system seems to be indicated by the label at the edge of room six, *ašrukkatu ša bāb iltāni*, ‘storage chamber of the north gate’, which suggests this room is adjacent to the gate on the north side.⁴¹⁵

Though not preserved on the plan, the north gate was probably located on the central axis of the building, in what would appear to be the south wall, following the apparent orientation of the plan (see the wide entrance space in room six on the reconstruction, fig. 74). The orientation problem can be resolved, however, if we assume this entrance was named the ‘north gate’ because it faced the north side of the building, not because it was located on the north wall.⁴¹⁶ This system is known from a number of other sources, including a ground plan of the high temple of the ziggurat of Marduk in Babylon carved on a stele of Nebuchadnezzar II, discussed below,⁴¹⁷ and evidence found on a number of Neo-Babylonian house deeds.⁴¹⁸

It appears from the plan that a *kūš* on the drawing is equivalent to 1.5 brick widths, producing a scale of c. 1: 60, making the total length and width of the building 19 x 14.5 m. The reverse of the tablet, though largely blank, shows two sets of parallel lines, one larger than the other, arranged at right angles on the right hand side of the tablet. Heinrich and Seidl⁴¹⁹ suggest these lines may have been a ‘practice’ attempt by the scribe for the grid used on the plan on

⁴¹⁴ Heinrich & Seidl 1967: 42

⁴¹⁵ Heinrich & Seidl 1967: 42

⁴¹⁶ Heinrich & Seidl 1967: 42

⁴¹⁷ See pp. 182-185

⁴¹⁸ Baker 2008: 37-38, with particular reference to the layout of the ziggurat temple in Babylon, as described in the E-sagil tablet.

⁴¹⁹ 1967: 44

the obverse. Bagg⁴²⁰ rejects this interpretation, pointing out that the scribe would have attempted to draw a grid rather than a series of lines, and it is entirely possible that the scribe was simply testing his drawing tool, particularly if he was unfamiliar with an instrument which had a small enough tip to produce the fine grid pattern found on the obverse plan.

An aerial perspective plan of the stages of a ziggurat

Like the fragmentary Hilprecht Collection ziggurat plan, two fragments of tablet housed in Berlin show an aerial perspective view of the stages of a ziggurat (fig. 75).⁴²¹ In this case, there is a plan of the same type on either side of the tablet, the front of which bears a short caption which reads *é siq-ra-te/ti ša d amar.utu*, ‘ziggurat of Marduk’, assumed to refer to the Etemenanki in Babylon.⁴²² The design on the obverse of the tablet is the better preserved of the two plans and shows three sides of a series of six concentric squares (fig. 75, right), while only a corner of a similar series of squares is preserved on the reverse. Since the middle of the tablet is not preserved, however, it is unknown whether these plans originally depicted a high temple at their centre, like the example found on the Hilprecht Collection ziggurat plan.⁴²³

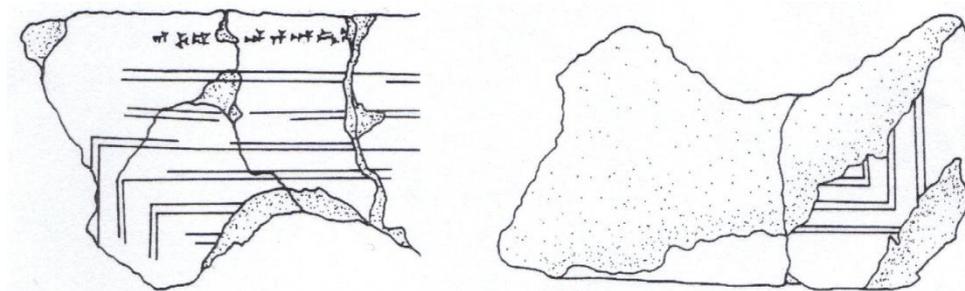


Fig. 75. The obverse (left) and reverse (right) of a Neo-Babylonian plan of a ziggurat

⁴²⁰ 2011: 549

⁴²¹ Pergamon Museum, VAT 8322 + 12886; clay; 7.9 x 13.5 cm (reconstructed from two fragments); Neo-Babylonian. Provenance and findspot unknown.

⁴²² Jakob-Rost 1984: 59

⁴²³ See pp. 138-144

The scribe used an interesting approach to illustrate the ziggurat stages, where a very narrow double line at the outer edge of each stage appears to represent the vertical drop of the step to the next level. This is a sophisticated drawing technique not found on any other plan in the corpus, and contrasts with the Hilprecht example which uses single lines to represent the ziggurat stages.

Although there are no dimensions on the plan, Jakob-Rost⁴²⁴ believes there is evidence that the scribe measured each line in order to ensure a consistent reduction rate for each of the ziggurat levels. The external lengths of each square range from c. 12.8 cm for the largest stage at the base, to c. 4.9 cm for the smallest stage at the top (the most central square preserved on the obverse plan), and each stage is reduced by between 1.4 and 1.7 cm, giving an average reduction rate of 1.56 cm. The closest contemporary measurement to 1.56 cm is the *ubānu*, or ‘finger’ measurement (c.1.66 to 1.69 cm), which might suggest that the scribe was working with this unit.⁴²⁵

The difference between 1.4 and 1.7 cm is a large enough inaccuracy, however, to suggest that the scribe was arranging the distances between each stage by sight, since it seems unlikely that the scribe would be this inconsistent if he was using a measuring instrument. Such a tool would presumably contain divisions in *ubānu*, like the example carved on Gudea Statue B,⁴²⁶ in which case it seems unlikely that the scribe would not be able to use this instrument to produce a consistent reduction at every stage. It is also clear from the tablet that each level of the ziggurat is not of a uniform width (see particularly the second stage from the base on the obverse of the tablet, which is narrower in the middle, and the third stage, which is much wider at the lower left hand corner). The scribe could have ensured a consistent width at each level by using a measuring instrument to place a small mark along the line of each ziggurat step and then joining them together. However, this does not appear to be the approach used, and it is questionable whether these inaccuracies can be attributed to phenomena such as clay

⁴²⁴ 1984: 59

⁴²⁵ Jakob-Rost 1984: 59; Heisel 1993: 40

⁴²⁶ Evidence of small-scale measuring instruments is rare, and the only example I am aware of in relation to length measurements of this size is the ‘ruler’ on Gudea Statue B (see above, pp 146-159), which is divided into *ubānu* with the Sumerian to Old Babylonian value of 1.666 cm (the value of the Neo-Babylonian *ubānu* may be between 1.6 and 1.66 and 1.69, as mentioned on this page). As mentioned in the discussion related to Gudea Statue B (following Powell: 462), the inconsistencies in the length of *ubānu* on the Gudea B ruler probably result from the fact that this instrument was drawn in the context of a piece of sculpture, probably not a scribe trained in technical drawing. It can certainly be assumed that the Babylonians were capable of making accurate small-scale measuring implements, and that they would have been able to use them to produce accurate technical drawings had they intended to.

shrinkage.⁴²⁷ It is possible, however, that the scribe based the plan on the ubānu and executed the drawing using a visual estimate of this measurement.

If one follows the reasoning that the scribe used ubānu on the plan, possibly at a scale of 1 ubānu = 1 gar assumed by Heisel,⁴²⁸ it is clear that the ziggurat in this design does not correspond to the ziggurat of Babylon, as described in the roughly contemporary E-sangil tablet. This may be because it represents an older version of the ziggurat, which is known to have had at least two previous phases before its Neo-Babylonian version.⁴²⁹ Without the central part of the plan, however, which presumably showed the ziggurat's high temple and may have contained more detailed measurement information, the purpose of the plan must remain unclear.

A vertical perspective plan of a ziggurat?

A tablet in the British Museum⁴³⁰ depicts what appears to be the outline of a ziggurat, and though it cannot be classed as a ground plan since it is drawn in the vertical perspective, it is included here since it shares a number of characteristics with Near Eastern aerial perspective plans and has generally been classed as a building 'plan' in previous works.⁴³¹ The drawing appears to show a six stage ziggurat, and though the top of the tablet is badly damaged, Wiseman⁴³² proposes a seventh stage in his reconstruction (see fig. 76 and Plate VII). Length and width measurements are inscribed on each level in kùš, and since the scribe did not orientate these labels towards the relevant side, he added the verbal qualifiers uš, 'length' and sag, 'height'. In addition, the total width of each stage is given in GAR, inscribed next to the relevant step.⁴³³

⁴²⁷ As suggested by Jakob-Rost 1984: 59

⁴²⁸ Heisel 1993: 41

⁴²⁹ Jakob-Rost 1984: 61 suggests this could be a preliminary study of the ziggurat, or possibly a ziggurat in Babylon's sister city, Borsippa. See also Schmid 1995: 62.

⁴³⁰ British Museum BM 38217; clay; 6.3 x 5 cm; Late Babylonian; provenance: Babylon? (According to Wiseman, the tablet's accession number, 81-3-30. 206 groups the tablet with texts from Babylon).

⁴³¹ See particularly Wiseman, 1972 and Heisel, 1993

⁴³² 1972: 14

⁴³³ Wiseman 1972: 142

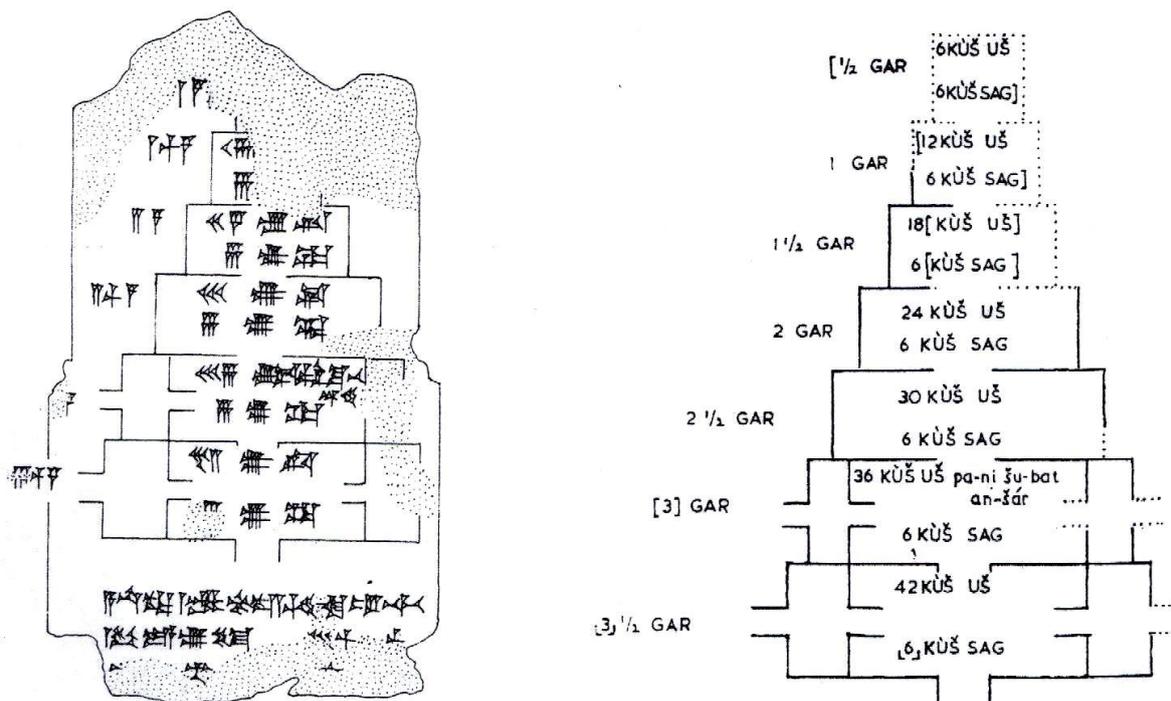


Fig. 76. Line drawing of BM 38217 with Wiseman's reconstruction on the right

The height of each stage is the same at every level, 6 kùš, while the length decreases by 6 kùš at every stage, from 42 kùš for the lowest level to 18 kùš at the fifth level, with the partially damaged sixth level and hypothetical seventh level assumed to be 12 kùš and 6 kùš respectively. The width of each stage is reduced by 1/2 a GAR at each level, starting with 3 1/2 GAR for the lowest stage, 1 GAR just visible for the sixth stage and 1/2 a GAR assumed for the seventh stage. The total height and width of the structure are therefore the same – 42 kùš (21 m) – making the ziggurat completely square.⁴³⁴ This is not reflected in the scale of the drawing, however, since all the stages are 6 kùš high yet are clearly different heights on the plan.⁴³⁵

At the first and second stages there are a number of pairs of lateral parallel lines, which extend both inwards and outwards at the sides and downwards in the centre. Wiseman⁴³⁶ takes these markings to represent frontal and lateral access points to the ziggurat, while the central gaps at the bottom of the third, fourth and possibly fifth stages may represent a frontal staircase which led to the seventh stage. If these pairs of lines are stairs, they are depicted as

⁴³⁴ Wiseman 1972: 143

⁴³⁵ Heisel 1993: 44

⁴³⁶ 1972: 141

though seen from above, thereby showing a combination of both aerial and vertical perspectives on the plan.⁴³⁷

Finally, a brief inscription on the second stage reads: *pa-ni šu-bat an-šár*, ‘Front (-view) of the dwelling of Anšar.’⁴³⁸ It is unclear whether this ‘front view’ refers to the whole of the plan, or to only the second stage. Unusually for a building plan, the tablet also includes a colophon on its reverse.⁴³⁹ Although only partially preserved, two lines of text can be deciphered: *a-na pī^{ld} Nabû-šuma-iš-kun Ki-sít-ti, Áh-ia-ú-tu....*, ‘According to the tradition of Nabû-šuma-iškun, of the lineage of Áhĩaútu....’⁴⁴⁰

The constructed version of the ziggurat depicted in this design would be unusually small, at only 21 m (based on the standard 50 cm cubit) or 31.5 m (if the larger Late-Babylonian *ammātu rabītu* or ‘big cubit’ of 75 cm is indicated by the term *kùš*) in height. Furthermore, assuming the reconstruction of the top level is correct, the uppermost platform would be only 6 cubits in length and therefore, depending on the size of the cubit used, the highest stage would be either 3 m² or 4.5 m². Taking into account the space occupied by the walls, a high temple on top of this structure could be no more than 1 m².⁴⁴¹ In light of the perfectly square shape and small size of the structure detailed on this plan, Wiseman has interpreted this tablet as a school text illustrating the ‘ideal’ form of a ziggurat, composed in the tradition of a mathematical problem text.⁴⁴²

This view has been recently challenged, however, by Keetman,⁴⁴³ who proposes that the plan represents the staircase of a ziggurat rather than an entire building. In addition to the problems raised by the unusually small dimensions given for the structure, Keetman also argues that the first and second levels of the structure are presented in aerial perspective, suggesting that the lateral access lines are smaller staircases which led to the main staircase. Keetman’s argument against Wiseman’s problem text interpretation relies heavily on his

⁴³⁷ Heisel 1993: 42. See also the Gudea Statue B plan (pp. 146-159) which may contain a symbol representing a cult stand depicted in vertical perspective.

⁴³⁸ Wiseman 1972: 142.

⁴³⁹ The inscription on the reverse of the Sippar-Jahrurum temple plan (see pp. 158-161) can also be considered a colophon, though it appears to be of a much more perfunctory nature than the partially preserved colophon on this example.

⁴⁴⁰ Wiseman 1972: 142

⁴⁴¹ Keetman 2011: 170

⁴⁴² 1972: 143

⁴⁴³ 2011: 169-176

assertion that there are no extant building plans which can be categorised as school texts,⁴⁴⁴ however, arguing that plan exercises were probably drawn on wax tablets.

Here, he cites the description of the Eninnu plan which features in the inscription on Gudea Cylinder A,⁴⁴⁵ suggesting that the ‘lapis lazuli tablet’ described in the text probably consisted of a wax board set in a lapis lazuli frame. Though wax tablets are known to have been used during the first millennium, however, there is no evidence that bees were domesticated during the Ur III period, and Gudea’s dream plan was therefore likely to have been conceptualised as a drawing engraved directly on a sheet of lapis.⁴⁴⁶ Furthermore, it has been demonstrated in this chapter that a number of examples in the building plan corpus, particularly the round texts from Kish, can be positively identified as school exercises.⁴⁴⁷

While it is therefore entirely plausible that this tablet could, as Wiseman suggests, be identified as a school text, it must be acknowledged that this ziggurat tablet differs to all the other examples of scholastic ground plans, not least since it shows a structure in elevation rather than aerial perspective. The presence of the epigraph ‘Front (-view) of the dwelling of Anšar’ is also unusual since, as Keetman⁴⁴⁸ points out, there would be no reason to assign a specific name to a hypothetical structure. This is a reasonable assertion, since the only other possible school text which identifies the building shown is the Old Babylonian plan of a temple and cellae which bears a caption identifying only a generic building type: *a-šèr-tú*, ‘sanctuary’.⁴⁴⁹

Keetman’s rejection of the school exercise argument and his argument that this plan represents a staircase rather than a complete ziggurat raises a number of further issues, however, since there are no comparable examples of architectural drawings of this type from the ancient Near East. If this plan is not an exercise, Keetman’s theory can only reasonably suggest that this tablet fulfilled some other function, presumably in the design and construction process. Keetman in fact identifies the ‘staircase’ shown on the plan with that of Ur-nammu’s ziggurat at Ur, though the mention of Anšar, not attested elsewhere before the

⁴⁴⁴ Keetman 2011: 72

⁴⁴⁵ See p. 19

⁴⁴⁶ B. Haskamp, pers. comm. 28/07/12

⁴⁴⁷ See for example the round texts from Kish, pp. 150-154

⁴⁴⁸ 2011: 171

⁴⁴⁹ See above pp. 156-157

Enuma-Eliš epic, suggests a dating for the tablet of no earlier than the seventh century BCE.⁴⁵⁰

Keetman also cites the tablet's colophon as part of his argument against the tablet being identified with a school text. Colophons are rarely found on building plans from the ancient Near East, and the only other examples in the corpus can be found on the Naram-Sin plan and an Old Babylonian plan of a temple. In the first example, the inscription provides details specifically related to the building's construction, in addition to the date of the plan.⁴⁵¹ The colophon on the Old Babylonian temple plan, which is almost completely preserved, reads: *uṣurti bīt Sippar-Jahrurum*, 'Design of a house in Sippar-Jahrurum', in addition to the date of the plan: [the year] 3 + [x] of Abi-Esuḫ.⁴⁵² The simple caption and date given on the Sippar temple plan is completely different to the formula found in the ziggurat colophon, which contains a reference to the scribe's lineage.

Such a colophon clearly does not follow the pattern found in the rest of the corpus, and its most significant feature is the formula used to describe the tablet's authorship. Here we find the phrase *a-na pī^{ld} Nabû-šuma-iš-kun* 'according to the tradition of Nabû-šuma-iškun...', which is highly unusual in the context of a plan, since the term *ana pī*,⁴⁵³ literally 'to the mouth', indicates that the tablet was dictated by Nabû-šuma-iškun, rather than written by him. This is crucial for our understanding of this piece, since the concept of 'dictating' a plan or technical drawing is entirely unknown from elsewhere in the ancient Near East.

Ultimately, the purpose of the plan is unclear, since it has no parallel in any other example in the corpus. Both Wiseman and Keetman agree that the tablet cannot show a realistic plan of a building, though Wiseman's suggestion that the piece represents a scribal exercise anchored in the problem text tradition is more sound than Keetman's assertion that the tablet represents the plan of a ziggurat staircase. After all, plans of specific architectural features are not attested elsewhere in the ancient Near East, and the mathematical expression of the 'perfect' ziggurat found on this tablet lends itself much more readily to a hypothetical exercise.

⁴⁵⁰ Cf. British Museum catalogue (BM 38217) accessed 28/05/2011

⁴⁵¹ See pp. 120-121

⁴⁵² See pp. 158-161

⁴⁵³ Cf. 'pû' (6a) CAD P, p. 466

The 'Tower of Babel' stele

A small basalt stele reconstructed from two fragments, now in the Schøyen Collection, also describes the completion of the ziggurats of Babylon and Borsippa by Nebuchadnezzar II (605-562).⁴⁵⁴ In addition to the text on the 'grave stone' shaped object which gives an account of this rebuilding project, a small relief on the upper two fifths of the stele depicts a standing man facing the outline of a ziggurat in elevation, above which a small ground plan is carved (see fig. 77). A second ground plan, with minor differences, is also inscribed on the left hand shoulder of the stele.⁴⁵⁵

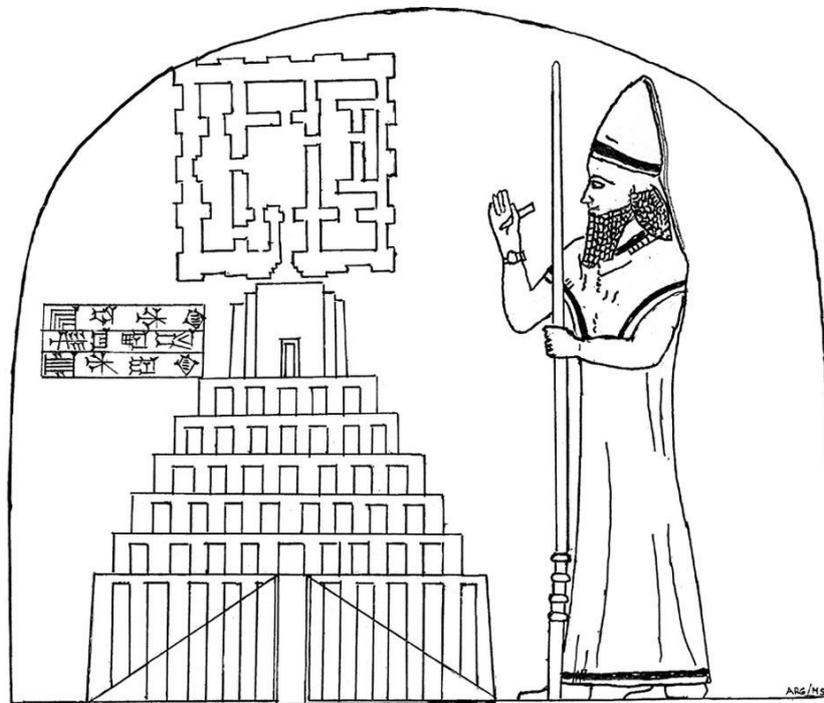


Fig. 77. Line drawing showing a reconstruction of the top of the 'Tower of Babel' Stele

Since the text on the stele is concerned with Nebuchadnezzar's reconstruction programmes, it seems likely that the standing figure is a depiction of the king himself. The elevation view of the building shows a seven stage ziggurat with the uppermost level occupied by a high

⁴⁵⁴ Schøyen Collection MS 2063; probably basalt; 47 x 25 cm. The provenance of the stele is unknown, but George (2011: 162) suggests it is probably Babylon.

⁴⁵⁵ George 2011: 153

temple, and a short inscription located next to it identifies the building as the Etemenanki in Babylon:

[é]-tem[en]-an-[ki]	E-temen-anki,
[z]i- <i>qú-ra-at</i>	the ziggurat of
[k]á.dingir.ra ^{ki}	Babylon. ⁴⁵⁶

The features of the double line ground plan suggest it represents the layout of a cult building since, as noted elsewhere, the niche and projection pattern on the external walls is typical of religious architecture. The same pattern is also found on a number of other examples such as the Akkadian temple enclosure plan, the Gudea Statue B plan and the Neo-Babylonian grid plan, where these niches are expressed in combinations of whole, half and quarter bricks.⁴⁵⁷ In addition, a number of doorways display the projecting pilasters typical of temple architecture,⁴⁵⁸ also seen on the Gudea Statue B plan.⁴⁵⁹ This effect has been found on three doorways in the north facade of the E-sangil courtyard, though the overall layout of the plan does not match that of the E-sangil and this plan, like the Hilprecht example,⁴⁶⁰ probably represents the high temple on the upper level of the ziggurat.⁴⁶¹

The recess located half way up the inside of the left-hand wall probably represents the cult niche, a feature not indicated graphically on any other temple plan from the ancient Near East. The same feature is found on the second of the stele's plans, located on the left-hand shoulder of the monument. Though not as well-preserved as the plan on the face of the stele, this second plan is almost identical to the first (see fig. 77). The main difference between the two plans can be seen in the composition of the external left-hand walls of the building,

⁴⁵⁶ George 2011: 154.

⁴⁵⁷ For the Akkadian temple enclosure plan see pp. 122-125, for the Gudea Statue B plan see pp. 146-159 and for the brick grid plan see pp 172-175

⁴⁵⁸ George 2011: 157

⁴⁵⁹ See pp. The Neo-Babylonian brick grid plan of a temple shows the same niche and buttress walls found on the Tower of Babel Stele and Gudea Statue B plans, though since none of the gateways are preserved on the plan, it is unknown whether they originally followed the same pattern found on these plans.

⁴⁶⁰ See pp.

⁴⁶¹ George 2011: 157.

where the first plan shows a sequence of five pilasters and four recesses, while the shoulder plan has a sequence of four pilasters and three recesses.⁴⁶²

A comparison between these plans and the description of the ziggurat of Babylon's high temple according to the E-sangil tablet reveals an interesting feature in this design, namely that the cult room is clearly located on the left side of the plan, while the E-sagil tablet describes Marduk's principal dwelling as the 'east chamber'. This matches the system of orientation system on the Neo-Babylonian brick-grid plan, however, where the orientation of a room is based on the side it faces, rather than the side it is located on.⁴⁶³

The stele's inscription is only partially preserved, and does not contain any explicit references to the planning and construction process which reveal how plans such as those on the monument might have been used, or indeed the shape and design of the ziggurat's high temple. A description of the high temple's gates according to the E-sangil tablet, however, throws doubt on whether these plans can be identified with the ziggurat's temple. The plan on the face of the stele shows a single gate in the lower facade, while the plan on the shoulder, which is better preserved on the upper side than the face plan, shows another gate in the facade at the top. It can thus be seen that these plans, based on the orientation suggested by the location of the cult niche on the east side, show a temple with gates located in the north and south walls. According to the E-sangil tablet, however, the high temple had two gates which faced south and west. In this case, George⁴⁶⁴ suggests the plan on the shoulder may represent the high temple of another ziggurat, probably that of Borsippa since the text on the stele also describes this monument's re-building.

Although it cannot be conclusively shown whether these plans are accurate representations of the high temples of the ziggurats in Babylon and Borsippa, they are effective illustrations of the *concept* of a high temple plan since they clearly display the hallmarks of religious architecture. Although patterns such as the niche and buttress formation on the external walls are found on other examples, the presence of a cult recess and the level of detail found on the internal entrances are unique to the stele plans, resulting in possibly the most easily identifiable and iconic cult building plans in the entire corpus. These plans form an integral part of the visual impact of the stele, and display the artist's commitment to creating two plans which are aesthetically pleasing as well as representative of religious architecture.

⁴⁶² George 2011: 158

⁴⁶³ George 2011: 158. See pp. 172-175 for a discussion of this topic in relation to the brick-grid plan.

⁴⁶⁴ 2011: 159

Like the example found on Gudea Statue B, the use of a ground plan which closely matches the type used in planning and construction to represent the high temples is significant, since it suggests that the concept of a building plan was familiar enough to effectively transmit this idea to the intended audience. In this case, since the stele was probably deposited in the foundations of the Etemenanki in Babylon,⁴⁶⁵ it can be assumed that its audience was limited. Yet the overall design of the stele's carvings and the content of the preserved inscription do not appear to be esoteric; the sculptor chose to clearly communicate the ideas of buildings and the building process, and achieved this partly by using a ground plan as a visual signifier. The presence of the plans on the stele hint that despite the limited examples from the ancient Near East, the concept of the building plan was widely known, forming part of an established tradition of technical drawing which was, in this case, adapted for use in monumental art.

⁴⁶⁵ George 2011: 163

THE ACHAEMENID PERIOD

Although only two plans survive from the Achaemenid period, both from Susa, the extant examples share a number of similarities with even the earliest plans in the corpus. These examples are also drawn on clay and provide evidence that even in the later periods of the ancient Near East, clay had still not been completely superseded by other materials sometimes considered a more suitable medium for drawing plans.⁴⁶⁶ Both Achaemenid plans were originally housed in the collections of the Louvre, but are now unfortunately missing. Since there are no photos available of these fragments, we must rely on de Mecquenem's⁴⁶⁷ line drawings of the original fragments.

A ground plan fragment with a set of stairs

The first of these fragments shows a section of a typical double line plan with ruled off gaps used to represent doorways.⁴⁶⁸ Although generally carefully drawn, some of the walls do not intersect cleanly, as seen on the join between the horizontal wall on the lower edge of the tablet and the attached perpendicular wall (see fig. 78).

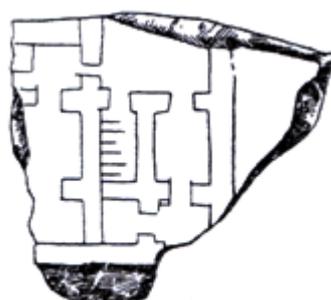


Fig. 78. Line drawing of a building plan fragment showing a set of stairs

⁴⁶⁶ Heisel 1993: 50

⁴⁶⁷ *Mémoires de la Délégation en Perse* XII (1911) figs. 38-39

⁴⁶⁸ Formerly housed in the collections of the Louvre but now missing, the catalogue number and dimensions are unknown. According to Heinrich & Seidl's (1967) catalogue, the piece was excavated on the Tell d'Acropole in Susa.

Of greatest interest on this fragment is the set of six short parallel lines located in the central room, which appear to represent stairs.⁴⁶⁹ Since only a small fragment of the plan is preserved, it is impossible to fully interpret the spatial arrangement of the building and therefore which part of the structure the stairs are located in. It is interesting to note, however, that the graphic symbol used to represent these stairs is virtually the same as that found on the Neo-Sumerian John Rylands Library plan.⁴⁷⁰

A ground plan fragment with a toilet

The second fragment from Susa⁴⁷¹ may be part of the same plan since, again assuming that de Mecquenem's drawing is accurate, both display a number of similarities. The double line walls, like those of the other fragment, do not intersect consistently on this plan, and the walls on both examples are not of a uniform thickness (see fig. 79). Without any direct joins visible in the drawings of the fragments, and without a comparison between the type of clay and the thickness of the tablet, however, it is impossible to state conclusively whether the pieces originally belonged to the same tablet.

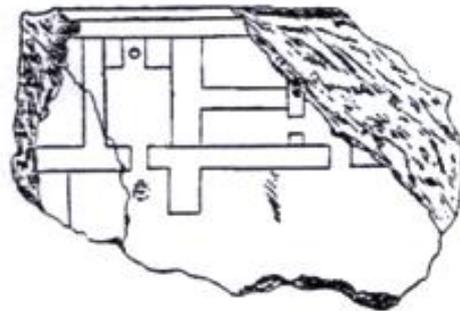


Fig. 79. Line drawing of a building plan fragment possibly showing a toilet

⁴⁶⁹ Heinrich & Seidl 1967: 44; also Heisel 1993: 50 and Bagg 2011: 555.

⁴⁷⁰ See pp. 135-137

⁴⁷¹ Like the other fragment from Susa presented here, very little is known about this tablet and its current location. This fragment was also housed in the collections of the Louvre but is now missing, and the catalogue number and dimensions are unknown. According to Heinrich & Seidl's catalogue (1967: 26-27), the piece was excavated on the Tell d'Acropole in Susa.

The most significant feature on this plan is the element found in the small room located on the left half of the fragment. Two short parallel projections, located directly next to the walls and around the same thickness have a small dot in the middle which probably represents the shape of a toilet seen from above.

CHAPTER CONCLUSION

It is clear from the examples discussed in this chapter that Near Eastern building plans tend to follow set graphic conventions, suggesting they belong to an established tradition of technical drawing. The use of the parallel line wall and gap doorway is the most common drawing method used to indicate basic architectural features, though the single line wall with double line or wedge doorway also appears to have been considered an acceptable method. Even when a fine-pointed drawing instrument was used to draw the walls, in a number of cases the scribe then selected a stylus to add double-wedge doorways, suggesting the double-wedge came to be seen as one of the standard visual analogies used to indicate access points in Mesopotamian building plans.

A number of examples contain measurement information or functional labels, while others lack any kind of written detail. All the buildings shown in these plans are square or rectangular, as demonstrated by the expression of their dimensions in linear measurements,⁴⁷² no doubt a result of the shape of the bricks used in construction.⁴⁷³ The purpose of these plans, however, cannot be tracked as easily as their stylistic trends. While they tend to follow similar graphic rules, they are more varied in terms of written content.

It can be assumed that plans were not a pre-requisite for the construction of buildings in Mesopotamia. If they were, we would expect a much larger sample of tablets and a much more standardised approach taken in relation to measurement information and labelling. Skilled builders would have inherited techniques through generations of construction work, and if they used any kind of 'plan' it is likely to have been drawn on the ground in real scale, as suggested by examples of full-scale drawings in building foundations which match the layout of the building constructed above.

Previous studies have argued either for the wholesale use of building plans as practical construction tools or site sketches. Heinrich and Seidl,⁴⁷⁴ for example, argue that these plans were probably site sketches, while Heisel⁴⁷⁵ points out that if this was the case, the discrepancies between measurements and scale, where these can be determined, would be much larger. Much attention has been paid to the accuracy of scale in the drawings

⁴⁷² It can be noted, however, that an Akkadian plan of a temple within an enclosure also contains an incomplete area measurement (see pp. 123-124).

⁴⁷³ S. Wheat (civil engineer, ARUP), email correspondence 15/04/12.

⁴⁷⁴ 1967: 45

⁴⁷⁵ 1993: 64

themselves, since it is generally perceived that this might conclusively indicate whether a Near Eastern plan could be used as a practical building tool. It must be pointed out, however, that even in modern practice, structural engineers primarily consult the given dimensions of a building rather than scaled drawings during the building process, and the inaccuracies in scaling on Near Eastern ground plans does not, therefore, necessarily preclude their usefulness as building tools.⁴⁷⁶

It must also be noted here that, unlike many of the field and plot plan groups such as the Late Babylonian property plan corpus,⁴⁷⁷ it is highly unlikely that any of the plans of private houses discussed here were ever used in a sales context, either as pre-sale surveys or contracts. This is evidenced by the fact that the administrative documents which record such transactions demonstrate that entire houses, which are shown in these plans, were very rarely sold throughout the history of the ancient Near East, but rather enlarged through the purchase or inheritance of small neighbouring plots.⁴⁷⁸

In fact, the purpose of the majority of plans collected here appears to lie in planning related to pre-building design, though it is also possible that they were used in on-site construction. In many cases, these plans are primarily concerned with organising interior spatial layouts and locating access points. In cases where detailed measurements are included, these appear to serve as a more accurate method of organising the layout of the building by noting how much space could be assigned to certain rooms and walls. Detailed measurements would also be particularly important when designing a building which was to be constructed on a plot of known size, since noting the dimensions of each element on the plan would aid the scribe in allocating ground space to different parts of the structure. The decided layout of the building might then be communicated to builders on-site by consulting the plan in order to agree on its spatial arrangement. Since information such as the volumes of building materials required are not included on these plans, it can be assumed that builders estimated this independently.

It is all too easy to conflate uniformity of design with uniformity of function, however, and a close analysis of these tablets shows that they varied in purpose. The ‘House of Puta’ plan, while still concerned with spatial divisions, may have related to the survey of multiple houses rather than a single building. At least one plan, the example dated to the reign of Naram-Sin,

⁴⁷⁶ A. Dennis (senior structural engineer, ARUP) email correspondence 11/03/12. Although modern structural engineers consult blueprints, they work specifically from written sets of dimensions.

⁴⁷⁷ See pp. 69-74

⁴⁷⁸ Van de Mierop 1999: 261

appears to fulfil some kind of bureaucratic purpose, suggested by the inscription on the tablet's reverse which describes groups of people and their possible relationship with the building shown on the obverse.

Other plans, like the Akkadian example of a production complex which contains a series of rolling mills, may have served to show the location of these devices within the building. Similarly, the Ur III ziggurat plan appears to have been drawn in order to show the placement of unknown cult items, possibly for the purposes of a specific ritual. Finally, the examples found on two pieces of sculpture, Gudea Statue B and the stele of Nebuchadnezzar II, suggest that building plans could be understood as a symbol of the idea of planning and building in the visual arts of the ancient Near East. That the concept of graphic plans may have been more widespread than suggested by the limited size of the corpus is also established by the presence of at least four school texts in the collection, suggesting that a scribe might, at some point in his career, expect to be called upon to produce a building plan.

CHAPTER FIVE: CITY PLANS

INTRODUCTION

A number of plans from the ancient Near East graphically indicate the presence of cities, including a plan of the region around Sippar which notes the location of the city with a square,⁴⁷⁹ and the Nippur irrigation network map,⁴⁸⁰ which indicates the presence of a number of towns with the use of circles inscribed with their names. In this study, however, city plans are defined as graphic maps which show the relationship between multiple elements within an urban environment. More specifically, the Sippar and Nippur irrigation maps are not categorised as ‘city’ plans since they note the presence or locations of cities, but nothing of their internal character, such as the arrangement of their walls, buildings or waterways.

In contrast, the examples discussed in this chapter show multiple elements of urban topography and architecture, including the relationships between fortifications, rivers and buildings. The first example, an undated fragment from Uruk, shows part of a city wall accompanied by a brief caption with a building to its interior. The second example, the Nippur city plan, is one of the most famous cartographic pieces from the ancient Near East, and offers an almost correctly-scaled graphic account of the walls, canals and major cult buildings of the city during the Kassite period. The third city plan, the Late Babylonian Tuba map fragment, shows a section of wall and a gate in the Tuba district of Babylon, while the final example discussed here shows a number of buildings and an adjacent road in an unidentified city. A pair of ‘labyrinth’ design tablets from the Schøyen Collection drawn in the style of city plans with multiple gates and winding paths will also be discussed in this chapter, since they appear to have been heavily influenced by the graphic conventions of Near Eastern city and building plans.

Since there are so few extant city plans from the ancient Near East, it will become clear that the examples discussed here do not form as cohesive and uniform a group as some of the

⁴⁷⁹ See pp. 104-106

⁴⁸⁰ See pp. 223-229

other cartographic collections from Mesopotamia, such as the field and building plan corpuses. It will be demonstrated, however, that they display many of the technical hallmarks common to all Near Eastern cartographic genres and, as such, they can be firmly placed in the wider context of scribal practices which anchor the maps and plans of the region in a coherent, established tradition.

THE URUK CITY PLAN FRAGMENT

An undated fragment excavated during the 1953-1955 seasons at Uruk appears to show part of a simple plan of the city accompanied by a series of captions (see fig. 80).⁴⁸¹ The tablet forms part of the Eanna Temple archive, much of which is now housed in the collections of the Baghdad branch of the Deutsches Archäologisches Institut, located in Heidelberg. This piece appears to be missing, however,⁴⁸² and is only very briefly discussed by Falkenstein in his summary of tablet finds from the site. In this report, he describes it as part of a ‘plan of the city of Uruk’,⁴⁸³ before stating that no other fragments which might supplement the tablet could be identified amongst other finds from the site.⁴⁸⁴ The original photograph published by Falkenstein is unfortunately of too poor a quality to translate the writing on the tablet, and we must assume that Falkenstein’s categorisation of the piece as a city plan is partly based on the tablet’s inscriptional evidence, since the graphic content of the fragment is not detailed enough to firmly identify the type of plan it shows.



Fig. 80. The only surviving photograph of a tablet showing a city plan of Uruk

⁴⁸¹ The current location and catalogue number are unknown, and the tablet remains undated. The fragment is known to have been 8.1 x 11.2 cm, however.

⁴⁸² The most recent reference to the piece appears in A. R. Millard’s article ‘Cartography in the Ancient Near East’ (1987), which refers the reader to Falkenstein’s original report in ADFU, Winter 1953/54 & Winter 1954/55 (1956). The most recent treatment of the archive by Erlend Gjelken (1990) does not include this piece in the catalogue. Gjelken also notes that Lenzen originally estimated the number of tablets in the archive at around 8000, while the collection in Heidelberg consists of c. 800 documents, suggesting significant losses between excavation and cataloguing.

⁴⁸³ “...einen Teil des Stadtplanes von Uruk” (1956: 42).

⁴⁸⁴ Falkenstein 1956: 42. No further comments are made on the captions on the tablet.

Despite the fact that a fuller interpretation of the piece is prevented by its loss, some observations can at least be made about the about the general graphic approach and techniques used by the scribe. The fragment is divided at roughly the halfway point by a single, curved line. Based on Falkenstein's categorisation of the fragment as a city plan, it can be tentatively suggested that this line represents part of the city wall, the course of which is closely followed by a single line of text. Millard interprets the small box to the right of this line as a building inside the fortifications,⁴⁸⁵ which suggests that the characters to the left of this division refer to the outlying suburbs or agricultural hinterland. Beyond these brief observations, there is little more which can be said about the piece, though as a rare example in a cartographic genre limited in size, it is an important addition to the collection of Near Eastern city plans.

⁴⁸⁵ Millard 1987: 110

THE NIPPUR CITY PLAN

One of the most famous cartographic discoveries from the ancient Near East is the Kassite⁴⁸⁶ period Nippur Map, a detailed and well-preserved city plan which includes the locations of some of the major temples, shrines and waterways of the city, in addition to a survey of its walls and gates (fig. 81).⁴⁸⁷ Excavated during the 1899 season at Nippur,⁴⁸⁸ the map is drawn roughly to scale and, unlike many examples from the ancient Near East in which the plan was distorted to fit the size of the tablet and then scaled through written measurements, this example is drawn on a tablet large enough to accommodate the scaled plan and its detailed content.⁴⁸⁹ Virtually all the elements drawn on the map are also identified with written labels, while a series of measurements clarifies the spatial relationships between a number of the plan's features.⁴⁹⁰

The walls are drawn using parallel lines, a technique commonly found on building plans,⁴⁹¹ and follow a circuit encompassing the visible portion of the city. One side of the tablet is damaged, however, and the remainder of the fortifications here are presumably broken off.⁴⁹² As a result, one side of the city wall is shortened and has only one gate, the Kagal Nergal, 'Nergal Gate' (the god of the underworld). This entrance is indicated graphically by a pair of

⁴⁸⁶ In the account given by Fisher in *Excavations at Nippur* (1905: 7), the map is described as being discovered by Dr Haynes during the 1899 campaign, and was palaeographically dated "either to the end of the Hammurabi Dynasty or to the beginning of the Kassite period" by Ranke and Clay. In *Excavations in Bible Lands* (1903: 517), H. E. Hilprecht claimed that the tablet was found during 1900, in a terracotta jar which yielded a collection of around twenty objects of considerable variation in both date and content, as though they had been specifically collected for their interest. Since Hilprecht did not arrive at Nippur until after the map had been found in 1899, however, it appears that it was not discovered in Hilprecht's terracotta jar, and its exact find spot is unknown (Gibson 1993: 4).

⁴⁸⁷ Hilprecht Collection, dimensions 18 x 21 cm, clay. Provenance : Nippur, findspot unknown.

⁴⁸⁸ The map was first published by H. E. Hilprecht as a photograph in *Explorations in the Bible Lands* (1903), before being brought back to the Friedrich-Schiller University of Jena in Germany. This photograph was of such poor quality that Assyriologists were unable to fully decipher it until S. N. Kramer secured permission to enter Germany after the Second World War. Therefore, despite its discovery at the turn of the 20th century, the map was not comprehensively translated or seriously studied until the 1950s (Kramer 1981: 369).

⁴⁸⁹ At 21 x 18 cm, the tablet is significantly larger than the average tablet size from the ancient Near East. As discussed in chapter four on building plans, tablet dimensions were rarely modified for the requirements of plan drawings.

⁴⁹⁰ Kramer 1981: 375.

⁴⁹¹ Gibson (1993: 4) suggests the scribe may have used a double line to represent the walls since a Kassite wall was built slightly above and inside the Ur III fortifications. The double-line wall is analogous to numerous examples on building plans, however, and does not necessarily reflect the reality of a set of two parallel walls. This is especially true if the map was a survey made in advance of a Kassite re-building programme, before the newer wall was built. At the same time, however, it must be noted that all the other examples of Near Eastern city plans use single lines.

⁴⁹² Excavations carried out during the 17th season (1987) at Nippur uncovered part of a city wall dating back to the Early Dynastic period on the north-eastern side of the city (Gibson et.al. 1998: 15), and the circuit presumably extended around the rest of the site, so we would expect a wall where the tablet is broken.

short parallel lines which cross the fortifications at a right angle,⁴⁹³ with the name of the gate then inserted into the resulting gap. A further six gates are noted on the plan using the same method: the Kagal Musukkatim, ‘Gate of the Unclean Female’, the Kagal Maḥ, ‘Magnificent Gate’, the Kagal Gula, ‘Great Gate’, the Kagal Nanna ‘Gate of Nanna’ (the Sumerian moon god), and finally the Kagal Uruk and Kagal Igi-bi-uri-še, the ‘Uruk Gate’ and ‘Ur-facing Gate’ respectively.

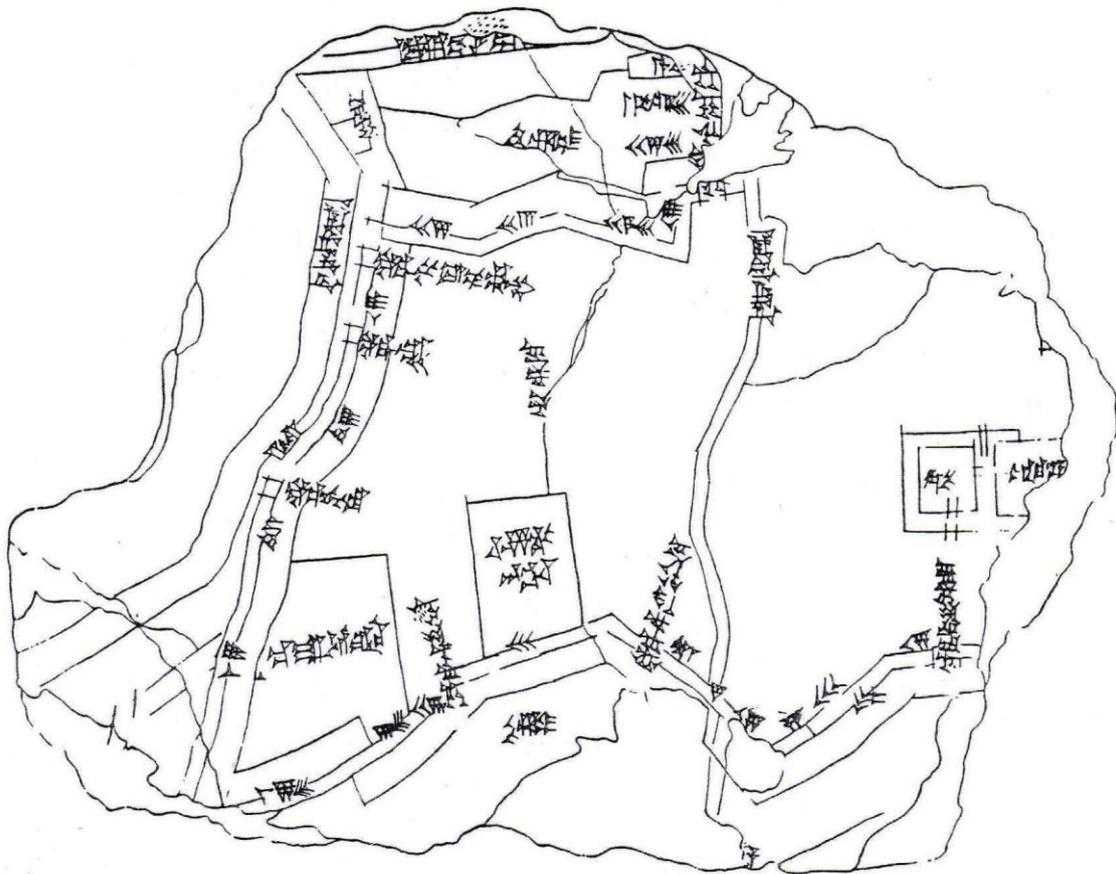


Fig. 81. Line drawing of the Kassite period city plan of Nippur

Although no directions are given on the plan, the latter two gates indicate its orientation. Both Uruk and Ur were located southeast of Nippur, which suggests that the wall these gates were

⁴⁹³ A technique also familiar from building plans, such as the ‘House of Puta’ example (see pp. 115-117)

built in must be located on the southeast side of the city, allowing the other walls and buildings to be placed on the correct axis.⁴⁹⁴ According to this orientation, the Kagal Musukkatim, Kagal Maḥ and Kagal Gula were located on the southwest wall, the Kagal Nergal was part of the northwest wall, and the Kagal Nanna was located on the southeast wall with the Kagal Uruk and Kagal Igi-bi-uri-še, mentioned above. Fig. 82 shows a drawing of the plan correctly oriented and superimposed on a modern topographic plan of the site.

⁴⁹⁴ Kramer 1981: 377

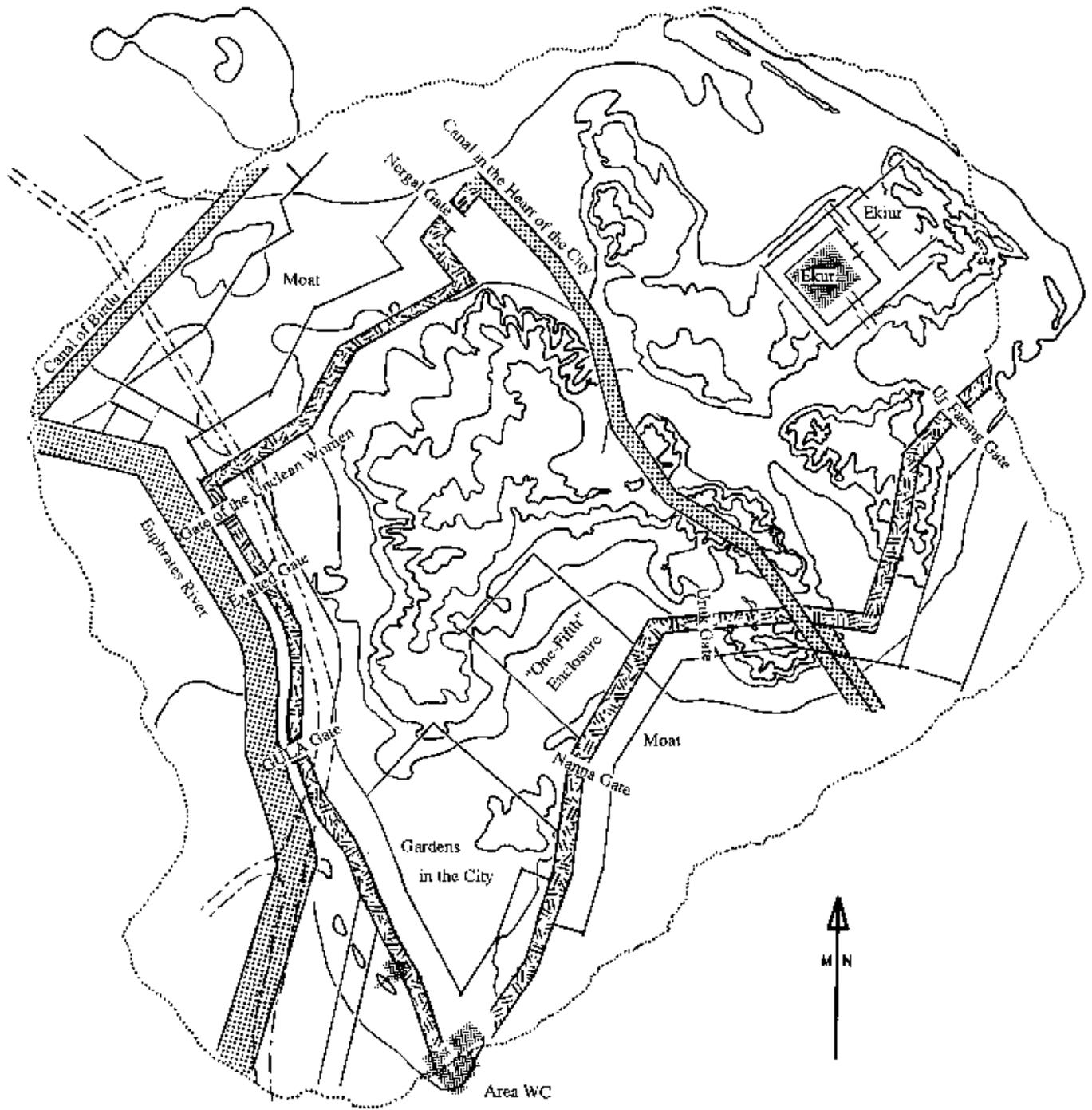


Fig. 82. Drawing by John C. Sanders of the Nippur plan superimposed on a modern topographic map of the site

Located next to the outer side of the northwest wall the scribe has written the word ‘moat’, using the Akkadian term, *hirītum*.⁴⁹⁵ This label appears to indicate a line which runs parallel to the northwest wall, replicating the course of the fortifications from the corner formed by the northwest and southwest walls as far as the Kagal Nergal, where the tablet is broken. The same term appears on the opposite side of the plan, next to slightly narrower gap created by a line attached to the southeast wall from a point near the southern corner to a point next to the ‘Ur Facing Gate’ where, again, the tablet is broken. Like its counterpart on the side of the tablet where the northwest wall is drawn, the label *hirītum* is not inscribed on this long channel but rather next to it, perhaps because the scribe found it too narrow to write inside. This initially seems odd, given that the scribe was able to write the names of the gates in very small openings, yet there is no other element drawn on this part of the tablet which the label could refer to, unless the moat was not indicated graphically.

Excavations during the seventeenth (1987) season at Nippur confirmed the presence of a moat which cuts off the face of the Ur III city wall at the southern edge of the site, dated no earlier than the Kassite period according to sherds found in the lowest layer of sediment. A plan of a section of the wall in the southwest corner shows that the moat is a similar width to the wall (fig. 83), as it appears to be on the ancient map. Since only one trench was sunk in this area, the full length of the southeast moat remains unexcavated, yet according to the map, the Nanna, Uruk and Ur-Facing gates all appear to open directly onto this channel. On the northwest wall, the Nergal Gate may also have opened onto a moat, though due to the damage to this side of the tablet the arrangement between this gate and the moat is less clear. The scribe gives no indication whether any of these gates were bridged, however, which must have been necessary if they were still used as access points to the citadel during this period.

⁴⁹⁵ Kramer 1981: 377

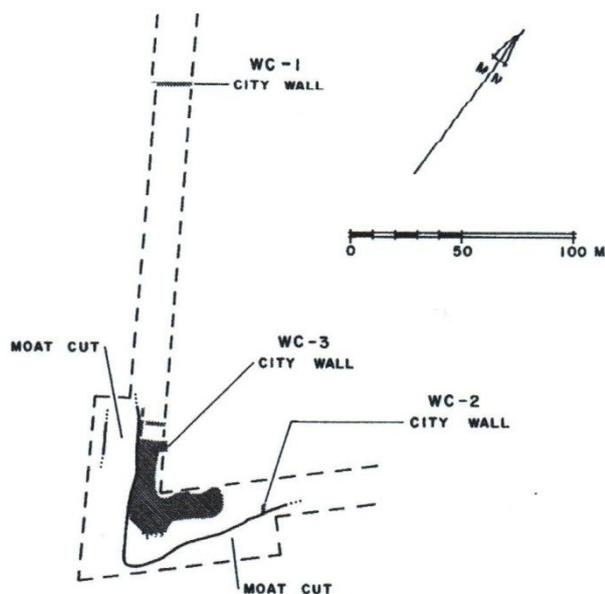


Fig. 83. A diagram showing the Kassite moat cut to the exterior of the fortifications in area WC AT Nippur

It is unknown whether there was another moat next to the northeast wall, since the tablet is broken on this side. A moat next to the southwest wall was presumably unnecessary since the Euphrates, written with its Sumerian name ‘Buranum’, is shown forming a natural barrier to the immediate exterior of the fortifications. There is a line attached to the southwest wall which follows a similar pattern to the moats on the northwest and southeast sides, yet in this case it is located to the interior of the wall. Although drawn in the same way as the other moats, this line was not labelled by the scribe and the type of topographic feature it represents is unclear. The course of the line overlaps with the moat on the outside of the southeast wall and runs inside the entire length of the southwest fortifications before stopping at the northwest corner, beyond which the northwest moat begins, once again to the wall’s exterior. The line inside the southwest wall might indicate either another moat, this time built internally due to the proximity of the Euphrates to the exterior of the fortifications, or perhaps another section of wall inside the Kassite version.

These unidentified lines highlight a number of problems with the lack of graphic differentiation on the map, since the scribe used very similar visual signifiers to depict features of different types, leading to some confusion when these elements are not explicitly labelled. Both the walls and waterways are depicted using a double line, for example, and

they would therefore be indistinguishable without their accompanying legends.⁴⁹⁶ In the case of the moats, and particularly the line to the inside of the southwest wall, this lack of graphic differentiation makes it impossible to identify some of the map's features. Had the scribe used the typical water-lining technique employed to denote rivers and canals in many other cases,⁴⁹⁷ the differences between the walls and other channels would be much more obvious. Until more excavation work is carried out on this section of the site, however, the significance of the line to the interior of the southwest wall must remain unknown.

In addition to these moats, a further three watercourses are indicated on the plan, all noted with the same double line technique used for the walls. The Euphrates, mentioned above, forms the southwest edge of the city, while the Birdu canal is located on the northwest side, beyond the walls and moat. The ^{id}ša-uru, or 'Mid City Canal',⁴⁹⁸ runs through the centre of the map and cuts across the city wall, indicated in the same way as the lines which represent gate openings, though there was presumably a break in the fortifications through which the water course exited the citadel. A short set of double lines also runs parallel to the portion of the 'Mid City Canal' located beyond the city wall, though there is no label here and it is unclear what these lines indicate.⁴⁹⁹

In addition to the walls and waterways a number of buildings are also drawn and labelled on the plan, including the Eš-maḥ shrine, located next to the Birdu Canal, the Annigina enclosure between the Nanna and Uruk gates, and a large area in the corner formed by the southeast and southwest walls labelled kiri₆-ša-uru, the 'Garden in the Centre of the City'.⁵⁰⁰ The Ekur and Ekiur temple complexes are noted on the northeast side of the city, and a group of short double dashes indicate the pathways, presumably sets of stairs, from ground level to the top of the Ekur, in addition to the steps or pathways joining the Ekur to the Ekiur.

The scribe also included a number of measurements on the plan, and though the unit of measurement is not given, Kramer⁵⁰¹ suggests he or she was probably using the GAR, a measurement of approximately 7 m.⁵⁰² The 'Mid City Canal', for example, is labelled with the number four. If we assume that the unit used is the GAR, its width would be roughly 28

⁴⁹⁶ Heisel 1993: 48.

⁴⁹⁷ See the Old Akkadian field plan examples (chapter two) and the Tuba map, discussed below (pp. 207-211)

⁴⁹⁸ Kramer 1981: 376.

⁴⁹⁹ On the topographic drawing with the Nippur map overlay (fig. 81), these lines are presented as an additional water channel. It must be noted, however, that this has not been confirmed by archaeological investigation.

⁵⁰⁰ Kramer 1981: 376.

⁵⁰¹ 1981: 377

⁵⁰² Donald 1962: 185

m, corresponding to the width of the Shatt-an-Nil, the modern remains of the waterway which now bisect the mounds of Nippur. The width of the Anniginna enclosure, about which very little is known, is given as 39 (GAR), or c. 273 m. A number of measurements are also given for the distances between certain gates; the Kagal Musukattim and the Kagal Maḥ are given a distance of 16 (GAR) apart, or c. 112 m, while Kagal Maḥ and Kagal Gula, are marked as 47 (GAR), or approximately 329 m apart. The only measurements which do not fit the proposed scale of the plan are the 7½ (GAR), or c. 52.5 m, written in the corner of the ‘Garden in the Centre of the City’, and the 24½ (GAR), c. 171.5 m, given for the third section of the northwest wall. If the scribe had intended to add an extra wedge to the latter number, however, it would read 34½ (GAR), or c. 241.5 m, solving this problem.⁵⁰³

The map is therefore incredibly accurate, with only a maximum 10% scale difference between the drawn elements and their physical counterparts, and it appears that a GAR on the map corresponds to c. 0.633 mm, resulting in a scale of approximately 1:940086.⁵⁰⁴ Due to its accuracy of scale and identification with a known site, the plan has therefore been unique in its role as a tool used in modern excavations, allowing archaeologists to identify and focus on specific parts of the site according to their position on the map.

During the thirteenth and fourteenth seasons of seasons at Nippur (1975-76), the focus of excavation work at the site was shifted from the West Mound to the southern edge of the city, where an aerial photograph taken in 1952 shows a set of lines, one light and one dark, which corresponded to a ridge less than 2 m high located at the edge of the mound and the corner formed by the walls next to the ‘Gardens in the Centre of the City’ shown on the map.⁵⁰⁵ This area, designated ‘WC’ by excavators, would have been low enough to be irrigable during the Kassite period. Kassite period sherds were found in trench WC-1, cut into the remains of a canal corresponding to the location of the Euphrates according to the map, and the remains of a canal branching from the ancient Euphrates channel were identified with the map’s Birdu Canal on the northwest side of the site. In the area labelled *ḥirītum*, also on the northwest side, Trench 2 revealed the presence of water-logged sediments 4m below the current plain level containing thousands of Kassite vessels.⁵⁰⁶

⁵⁰³ Kramer 1981: 379

⁵⁰⁴ Heisel 1993: 37

⁵⁰⁵ Gibson 1993: 4

⁵⁰⁶ Gibson 1993: 7

The identification of some of the areas on the map during excavations has raised two issues, however, which reveal potential inaccuracies in the plan. Firstly, the ‘Mid-city canal’ does not exactly match the angle of the modern Shatt an-Nil’s course through the site, though it is in roughly the right location and corresponds in scale to the width of the canal on the map. Secondly, the location of the Ekiur and its relationship with the Ekur originally led to some confusion over the orientation of the plan, with a number of archaeologists rejecting Kramer’s suggestion of a north-western orientation for the map. This confusion was partly due to the discovery of a small shrine in a forecourt located to the southeast of the main ziggurat, made during excavations in the early twentieth century. This shrine was identified by Fisher with the Ekiur on the ancient plan, and the map was therefore oriented to match the location of this shrine. The evidence that this building should be correlated with the Ekiur of the map, however, is uncertain due its partial excavation, and the size of the courtyard it originally stood in also remains undetermined.⁵⁰⁷

Kramer originally suggested that the scribe who drew the plan was primarily concerned with the city’s walls, indicating that the purpose of the plan may have been to survey the defence system in anticipation of an external threat.⁵⁰⁸ There is no archaeological or textual evidence that Nippur was ever attacked during this period, though it is clear that there were only limited fortifications in the southern parts of the city during the Isin-Larsa and Old Babylonian periods after the erosion of the Ur III wall, which eventually deteriorated into a large sloping rampart.⁵⁰⁹ There is certainly evidence of a new Kassite wall constructed inside the Ur III version,⁵¹⁰ however, in addition to the Kassite moat, mentioned above, which cut across the face of the Ur III wall and appears to be of a similar width.⁵¹¹

Indeed, there appear to have been a number of building projects across Nippur during the Kassite period, and reconstruction work was not limited to the city’s fortifications. The city underwent a period of decline after around 1720 BCE, with no evidence of occupation in the southern part of the site between the Ur III and Kassite periods, possibly due to ecological factors such as a shift in the main branch of the Euphrates running through Nippur. New irrigation projects implemented during the Kassite period appear to have made the city habitable again, and throughout the 13th century restorations were carried out on the ziggurat

⁵⁰⁷ Gibson 1993: 5; Zettler 1984: 238

⁵⁰⁸ Kramer 1981: 377. Donald (1962: 188) also suggests the lack of interest in private and residential buildings on the map suggests a military purpose.

⁵⁰⁹ Gibson 1993: 7

⁵¹⁰ Gibson *et.al.* 1998: 21

⁵¹¹ Gibson *et. al.* 1998: 26

complex, the Inanna Temple, the Gula Temple, the North Temple and a section of wall around the West Mound, in addition to the construction of new administrative buildings, such as a large structure tentatively identified by excavators as the governor's palace.⁵¹²

There are no administrative buildings on the map, however, or any internal roads or transport networks indicated around the city's interior.⁵¹³ There were clearly a variety of building and reconstruction projects implemented at the site during the Kassite period, yet the map appears to be solely concerned with the walls, major access points, waterways and only a handful of religious buildings and public spaces. The Nippur map is therefore likely to have been the result of an initial survey of the city, made before these large-scale building programmes took place. If the locations of the Ekur and Ekiur complexes on the map are incorrect, this is perhaps because the scribe himself was unfamiliar with the Ur III layout of the city and had to partly guess their locations.⁵¹⁴

The only features on the map which we can confirm were constructed no earlier than the Kassite period are the moats. Although there is evidence of a Kassite wall built inside the Ur III fortifications, it is impossible to know whether the fortifications on the map are the Ur III or Kassite version. The moat uncovered in area WC, however, has been dated no earlier than the Kassite period.⁵¹⁵ In light of this, it appears that the map was either made before the new canals were dug, in which case it shows a projected plan of their course, or the map was made after their construction and the scribe added the canals to the map as a general illustration of the city's fortifications.

The site plan of the city wall and moat (fig. 83), however, shows a moat cut which wraps around the corner formed by the southeast and southwest walls. Comparing this to our map (fig. 81), it is clear that the scribe had only drawn the course of the moat reaching a point next to the 'Gardens in the Centre of the City', where it stops before reaching the southwest corner. It would be illogical for the scribe to end the moat here if, in reality, it continued to run the full length of the southeast wall before continuing and its circuit along the southwest wall, where it perhaps joined the Euphrates channel. This suggests that the map was made before the moats had been dug, and one of the functions of the design may have been to plan the courses of these moats, which were then changed during the construction phase.

⁵¹² Gibson 1993: 8

⁵¹³ Heisel 1993: 35

⁵¹⁴ Gibson 1993: 5

⁵¹⁵ Gibson 1993: 7

It is doubtful, however, that the map's sole purpose was to plot the course of these moats. It is clear that the plan is very likely an 'initial survey' in the sense that it was made prior to a large-scale, comprehensive Kassite regeneration programme, yet it must be stressed that the map itself is not an on-site 'sketch'. Rather, it appears to be the product of a number of surveys which were then used to draw up a permanent graphic record of the city's major topographic features and cult buildings. This is clear for a number of reasons; firstly the plan is incredibly well-drawn, and the fineness and straightness of the lines suggest that specific drawing tools were selected in order to compose the map.

Similarly, the accuracy of its scale points to a technical approach not found in site 'sketches' or, indeed, many Near Eastern cartographic examples, where plans were more often scaled through their written measurements.⁵¹⁶ Finally, as mentioned above, at 21 x 18 cm the tablet is unusually large, suggesting that a number of initial drawings were made before a tablet large enough to accommodate the scaled plan was made. The archaeological context of the map is unknown,⁵¹⁷ though it seems likely that it was originally archived and at some point used – or at least intended to be used – as a graphic tool for identifying parts of the city not only during an initial re-building programme, but also as part of continuing maintenance projects.⁵¹⁸

The Nippur map is both the most complete and accurate city plan from the ancient Near East, and has thus far proved to be invaluable for archaeologists investigating the site. Much of the previous commentary on the plan, however, has been exclusively concerned with the labelled elements of the map which can be identified with their physical counterparts at the remains of Nippur. Yet a number of the plan's features, such as the unlabelled line to the interior of the southwest wall, remain unidentified. In time, further excavations may help illuminate the elements of the map which are presently unclear, so that the plan and its purpose can be better understood.

⁵¹⁶ It must be noted that an analysis of scale is not always possible in the case of Near Eastern plans, since the site, building or field shown on a plan is rarely identified. It is clear from numerous examples of field plans (see chapter 2) and building plans (chapter 3), however, that scale was usually indicated through written measurements rather than by graphic means.

⁵¹⁷ See note 489

⁵¹⁸ I am grateful to Dr Irving Finkel for this suggestion, made in conversation during a small conference at the University of Birmingham in June 2012.

A PLAN OF THE TUBA DISTRICT IN BABYLON

A fragment of a very well-executed city plan shows part of the Tuba district, located in the northwest quarter of Babylon (fig. 84).⁵¹⁹ The preserved piece is relatively small, though the curvature of the fragment suggests it is originally from the top of large four columned tablet,⁵²⁰ in which case the complete piece may have been larger than the Nippur map (see fig. 85 for a hypothetical reconstruction). In addition to the plan on the reverse, a fragmentary inscription on the obverse contains a metrological commentary concerned with the topography of Babylon, part of which deals with the length of its city wall, Imgur-Enlil.⁵²¹



Fig. 84. Line drawing of a fragment of a city plan from Babylon showing part of the Tuba district

⁵¹⁹ British Museum BM 35385; Late Babylonian; clay; 7.9 x 10.7 cm; provenance and findspot unknown.

⁵²⁰ George 1992: 381

⁵²¹ George 1992: 133

The plan shows a river or canal, with a section of city wall breached by a single gate. The area is identified by a label in the centre of the plan, *tu-ba^{ki}*, and the gate is indicated by a short pair of parallel dashes set at a right angle to the single line of the wall, labelled *abul d^šsamaš*, ‘Šamaš Gate’.⁵²² The double-lined canal emerges from the edge of the fragment where the tablet is broken, and is embellished using the water-lining technique familiar from a number of Near Eastern examples, particularly those of the Old Akkadian period.⁵²³ The canal is unlabelled, though it is likely that the scribe identified this channel at a point on the tablet now broken off. This canal changes course with a sharp right angle where it meets a single line halfway across the fragment, running parallel with this line before changing course twice more and reaching the edge of the tablet. It is unclear what this single line represents, though it follows a course symmetrical to that of the canal, forming an enclosed area around the label *tu-ba^{ki}*.

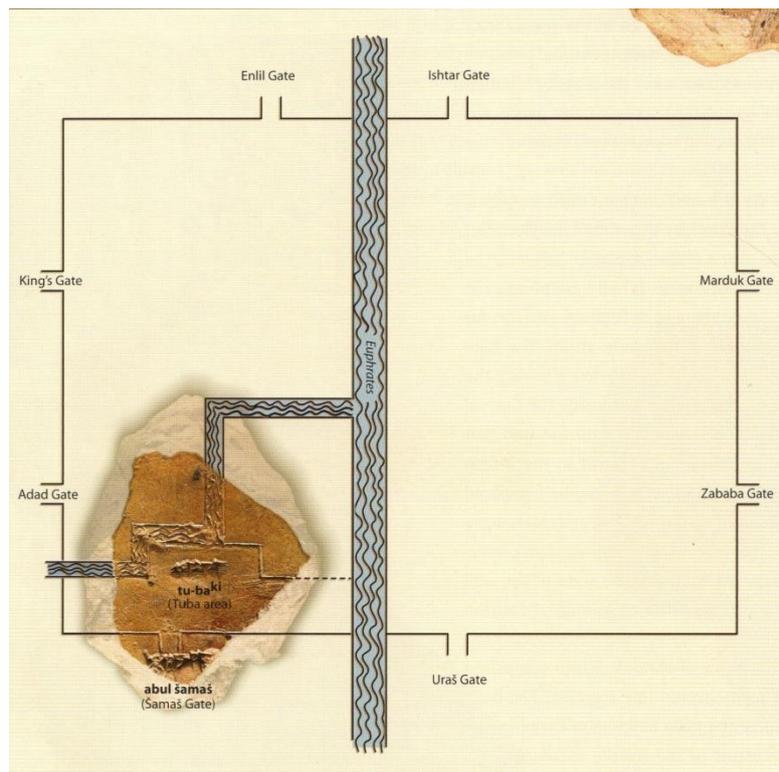


Fig. 85. A potential reconstruction of the original ‘Tuba’ map

⁵²² Campbell 1906: 12

⁵²³ See for example the Old Akkadian field plans discussed in Chapter 2, and the Old Akkadian map discussed below (pp. 223-229).

The layout of the city districts, walls and gates of Babylon are well-known from extensive descriptions preserved in a series of twelfth century ‘topographical’ texts known as ‘*Tintir* = Babylon’, named after the text’s opening line which introduces the various names and epithets of the city. Though originally thought to be primarily topographical in nature, the most extensive edition of the texts by A. R. George⁵²⁴ reveals the composition to be a series of five tablets primarily concerned with the theological character of Babylon, related through lists of the city’s religious buildings with the character of a lexical list. The texts are still rich in topographical information, however, and remain one of the most important sources for understanding the layout of Babylon from the Kassite period to the Persian era.⁵²⁵ This is particularly significant for our knowledge of the Tuba district since the west side of Babylon, in which it was located, now lies beneath the water table of the modern course of the Euphrates, and thus remains unexcavated.⁵²⁶

The ten quarters of the city are listed in Tablet V, where their limits are defined by two topographical reference points. Tuba is given as one of the four quarters of the west bank of Babylon:

ultu abul ^dŠamas a-di nāri(íd) tu-ba šumšu(mu.ne)

4 *ālānu* ^{meš} šá ta-mir-ta-šú-nu hengallu (hé.gál)

‘From the Šamaš Gate to the river is called Tuba.

The 4 city-(quarters) of the west bank.’⁵²⁷

This description is confirmed graphically by the plan, where Tuba is located just inside the city wall next to the Šamaš Gate, which is listed last in a sequence of eight city gates in tablet V, lines 49-56. The Imgur-Enlil wall and Nīmit-Enlil rampart are then mentioned before the

⁵²⁴ *Babylonian Topographical Texts*, 1992 (Leuven)

⁵²⁵ George 1993: 13. Although the texts were composed during the twelfth century, excavation and other topographical material suggest that the layout of the city changed very little throughout its habitation after the Kassite period. It is therefore likely that the area of Babylon shown on the Tuba map would have been essentially unchanged from the Kassite period.

⁵²⁶ George 1992: 22

⁵²⁷ *Tintir* V: 102-103. Translated by George 1992: 70

names of three of Babylon's rivers are given in lines 59-61: the Araḫtu River (the branch of the Euphrates which ran through Babylon), the ḪU-du-uk-[...] and the Lībil-ḫengalla.⁵²⁸ The channel which appears on the Tuba fragment cannot be the Araḫtu, since it is known to have followed a straight course through the middle of the city, bisecting the eastern and western halves of Babylon. Nor can it be the Lībil-ḫengalla, since the text clearly states that this channel was located in the eastern half of the city. In this case, if the canal depicted on the map is one of those listed in *Tintir*, it can only be the ḪU-du-uk-[...]. This name is not attested elsewhere, yet it would be logical to assume that the scribe might list a canal in the western half of the city, in addition to the central Araḫtu River and the Lībil-ḫengalla on the eastern side.⁵²⁹

The only buildings listed by *Tintir* in Tuba are temples, underlining the primarily theological nature of the text. None of these appear on our map, though we can assume they formed a significant part of the district's architectural fabric. Tuba's temples are listed in Tablet IV, and are identified as the Temple of Bēlet-Eanna, the Temple of Gula and the Temple of Nabû.⁵³⁰ Since this side of Babylon remains unexcavated, few architectural details or the more specific locations of these temples are known, though their names appear in a number of other texts from the archives of Babylon.

Of particular interest here is the temple of Bēlet-Eanna, which appears in a number of inscriptions of Nebuchadnezzar II, who rebuilt the temple in the 6th century BCE. The temple is described in these inscriptions as occupying a recess in the city wall, which may have been a corner created by a tower or similar addition to the Šamaš Gate, or an independent tower located inside the fortifications.⁵³¹ If this is the case, its location was conceivably within the area shown on the map yet it was not included by the scribe, despite ample space on the fragment which would have allowed for the inclusion of such a detail.

Similarly, the processional road which led from the Šamaš Gate in Tuba to the Šamaš Temple in the Kullab district, the Šamaš-šulūl-ummānīšu,⁵³² is also mentioned in *Tintir*, yet was also omitted by the scribe. It therefore appears that the scribe was solely concerned with the graphic representation of the walls, gates and major waterways on the map, and it can be

⁵²⁸ *Tintir* V, 59-61. Translated by George 1992 : 67. The Araḫtu also appears on a fragment discussed above, which also features a waterway referred to as the 'King's Ditch' (see pp. 107-109).

⁵²⁹ George 1992: 381

⁵³⁰ *Tintir* IV, 41-43. Translated by George 1992: 62

⁵³¹ George 1992: 330

⁵³² George 1992: 27

assumed that the missing parts of the plan would have followed essentially the same format, where the names of the city quarter and its primary access point were noted. In contrast to the Nippur map,⁵³³ however, in which it is conceivable that sections of the walls and moats drawn on the tablet were not constructed until after the plan was drawn, it is clear that the Imgur-Enlil wall and the Šamaš Gate were features of Babylon's topography by the Late Kassite period, and therefore before the map was made.

The metrological inscription on the obverse of the tablet also appears to be at least partly concerned with the walls of Babylon, though only sections of columns I and II remain of what was probably originally a four column text. Column I makes numerous references to Babylon and its E-sagil Temple, with its cosmological theme highlighted by the various epithets of the sanctuary and its comparison with the primordial ocean Apsû. The extant portion of Column II, however, contains four lines (ii, 10-13) devoted to the dimensions of the Imgur-Enlil wall, a section of which clearly appears on the Tuba map. The wall is divided into four sections, 'Upper East Wall', 'Lower East Wall', 'Upper West Wall' and 'Lower West Wall', in which the length of each section is given in giš and nindan.⁵³⁴ The total figure for the Imgur-Enlil from the four sections of the circuit is 1200 nindan, or roughly 7200 m.⁵³⁵

There is no evidence that the map was used in any type of planning activity, unlike the Nippur map, and the cosmological flavour of the tablet's inscription also sets this example apart from many of the plans of the ancient Near East. This can be seen in the fact that cartographic tablets rarely include self-contained inscriptions in addition to captions and labels on the maps themselves and when they do, as in the case of the Late Babylonian property plan corpus, they are essentially administrative in nature. It can also be noted, as mentioned above, that the plan itself is very well-executed in comparison to many maps and plans from the ancient Near East, with much technical skill and care evident in the quality of its graphic elements. In this case, it seems that the map was drawn in order to illustrate the text on the obverse, serving as a visual guide to a written description of the city.

⁵³³ See pp. 196-206

⁵³⁴ George 1992: 133,135

⁵³⁵ This number does not correlate to the figure of 8015 m for the length of the wall circuit according to modern surveys of the site, but if one takes into account the rounding up of the ancient numbers to the nearest 10 *nindanu* and the inexact calculation of 1 cubit to 50 cm, it appears that the text on the obverse of BM 35385 refers to the Imgur-Enlil (George 1992: 136-137).

A FRAGMENT OF A PLAN SHOWING PART OF AN UNKNOWN CITY

Another Late Babylonian fragment also shows part of city, this time unidentified, with a number of buildings and roads visible on the tablet's poorly-preserved surface. The fragment, possibly from Sippar,⁵³⁶ depicts a temple represented as a single line square joined to two longer, narrower single line structures, and is identified in a caption as *bīt bēlu* 'House of Bēl' (Marduk), with an adjacent street identified as *sūqu...* '...street' (fig. 86). These are the only labelled elements on the plan, though the fragment shows a number of other structures, including an unlabelled building on the right hand side of the tablet, separated from the 'House of Bēl' by the *sūqu...* '...street'.

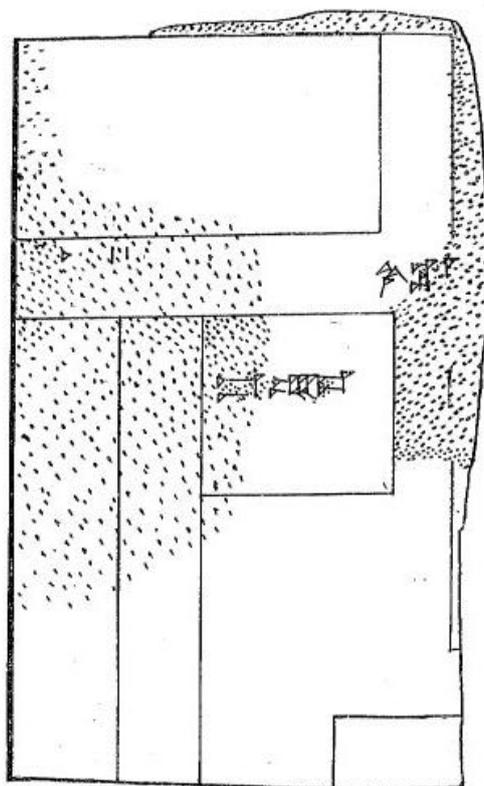


Fig. 86. Line drawing showing a fragment of a city plan

⁵³⁶ British Museum BM 73319; Late Babylonian; clay; 4.1 x 7.6 cm. Provenance: Sippar? findspot unknown.

The preserved portion of this building is much larger than the temple, at over twice the size, and its name may have been inscribed on a part of the tablet now broken off. Finally, an open space to the left of the ‘House of Bēl’ leads another square structure in the lower left hand corner of the tablet. Another caption may originally have been inscribed on the section of street located towards the top of the tablet, though the writing here is too poorly preserved to be deciphered. A single line of text is also preserved on the reverse of the tablet though, again, this is too fragmentary to be well-understood.

Campbell Thompson⁵³⁷ identifies the ‘House of Bēl’ with the main temple of Marduk in Babylon, the E-sagil, and the adjacent street as the processional road ‘Ay-ībur-šabû’, which led to the temple. The E-sagil, the same temple mentioned in the text on the obverse of the Tuba map, formed part of a large complex with the Etemenanki ziggurat in the centre of the city. The Ay-ībur-šabû is known to have led from the Ištar Gate on the northern side of Babylon, from which it followed a southerly route past the eastern edge of the palaces and Etemenanki ziggurat before arriving at the E-sagil. It is unknown on which side of the E-sagil the road entered the complex since, as George points out, it is conceivable that the road turned west between the Etemenanki ziggurat and the E-sagil complex. He also suggests, however, that since Marduk’s cella faced east and the main complex gate appears to have been located on the eastern side of the complex, it would be logical to assume that the processional way led to the eastern side of the E-sagil.⁵³⁸

If the temple on the fragment can be identified with the E-sagil of Babylon, it can be assumed that the Etemenanki ziggurat is located above the square temple shown on the plan, and can perhaps be identified with the larger square located opposite the ‘House of Marduk’ on our map. The type of feature represented by the lines to the left of the temple is unclear, though if this fragment does show Marduk’s temple in Babylon, the Euphrates should be located on the same side of the E-sagil as the lines shown here. Since the provenance of the tablet is unclear, however, the temple and streets shown on the fragment cannot be firmly identified with those of Babylon. The British Museum catalogue⁵³⁹ suggests a possible provenance of Sippar for the map, and it is equally possible that the plan shows a temple dedicated to Marduk in that city, or a number of others in Babylonia.

⁵³⁷ Campbell Thompson 1906: 13 (CT XXII)

⁵³⁸ George 1992: 422

⁵³⁹ British Museum online catalogue, accessed 03/06/12

Though the identity of the area shown on the map remains unknown, it can be noted that the fragment is entirely unique in the Near Eastern cartographic corpus since it is the only example of an urban plan which includes a graphic representation of a road. The plan itself is reasonably well-drawn, though single lines are used to depict all the architectural features shown on the map, and it is therefore impossible to interpret the set of lines adjacent to the left hand side of the 'House of Marduk'. The purpose of the map remains unclear, though it suggests that detailed urban maps depicted the relationship between buildings and roads were not unknown in the ancient Near East.

A PAIR OF OLD BABYLONIAN LABYRINTH TABLETS IN THE SCHØYEN COLLECTION

Although it is clear that they do not represent plans of real cities, a pair of Old Babylonian tablets with labyrinth designs recently identified in the Schøyen Collection were clearly influenced by the design of city plans, and are included here for comparison with the rest of the corpus. The first of these tablets shows a square labyrinth in the form of what Friberg describes as a ‘fortified city’ with one ‘gate’ on each side (fig. 87).⁵⁴⁰ The gates at the top and bottom of the city are closed, while the gates on the left and right sides are open. Friberg originally suggested that only one of the paths from the open gates reached the centre, or ‘goal’, while the other path resulted in a dead end.⁵⁴¹ Both these labyrinth tablets have recently been baked, however, revealing that both of the paths through the open gates reach the centre, and one has the choice of entering the labyrinth and returning through the same gate, or entering through one gate and leaving via the gate on the opposite side⁵⁴² (see fig. 88 for the directions of these paths).⁵⁴³



Fig. 87. A square tablet with a
labyrinth design

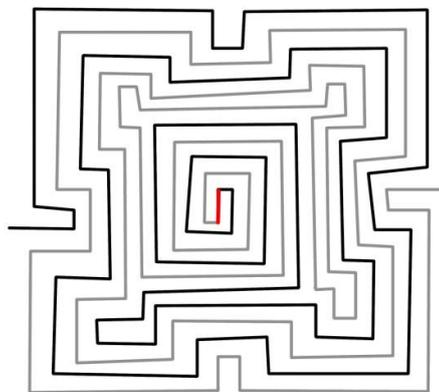


Fig. 88. The left and right ‘paths’
of the square labyrinth

⁵⁴⁰ Schøyen Collection MS 4515; Old Babylonian; clay; 6.9 x 6.6 cm. Provenance and findspot unknown.

⁵⁴¹ Friberg 2007: 220-224

⁵⁴² I am grateful to Prof. A. R. George for providing me with photos of both the Schøyen labyrinths taken after baking, on behalf of the Schøyen Collection.

⁵⁴³ Note that the black line follows the path through the left hand gate, and the grey line follows the right hand path. The red line shows where both paths meet.

As Friberg points out, the construction of these designs requires a fairly sophisticated algorithm, or series of sequential steps, to achieve such a level of complexity, and the drawing process was probably refined through a number of attempts.⁵⁴⁴ The second labyrinth in the Schøyen Collection is constructed in a similar manner to the square version, though it is rectangular in shape and therefore has ten gates instead of four, with two gates on each of the shorter sides at the top and bottom of the labyrinth and three on each of the longer sides (fig. 89).⁵⁴⁵ Again, only two of these gates are ‘open’, yet both of these paths lead to the centre. Since this labyrinth is larger and the paths therefore more complex than those of the square labyrinth (fig. 90),⁵⁴⁶ its construction requires more than twice the number of steps required for the smaller version.⁵⁴⁷

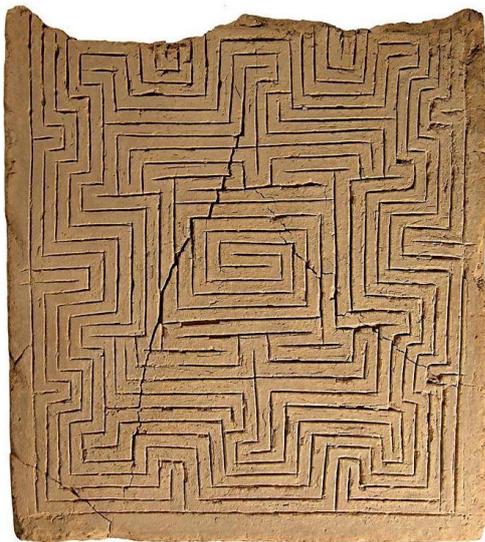


Fig. 89. The rectangular labyrinth

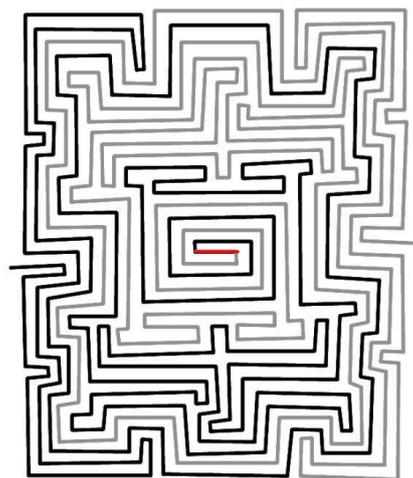


Fig. 90. The left and right ‘paths’ of the labyrinth

Friberg believes the design of these labyrinths may have been influenced by other scribal practices such as the design of city plans, and they certainly share a number of similarities

⁵⁴⁴ Friberg 2002: 220

⁵⁴⁵ MS 3194, rectangular Old Babylonian labyrinth tablet. Clay, 11.7 x 10.3 cm. Courtesy of the Schøyen Collection.

⁵⁴⁶ The paths at the broken end of the tablet have been reconstructed based on the assumption that the labyrinth is symmetrical, as it is in the case of the square labyrinth MS 4515. The black line follows the path through the left hand gate, and the grey line follows the path through the right hand gate. The red line shows where both paths meet.

⁵⁴⁷ Friberg 2002: 224

with cartographic designs from the ancient Near East,⁵⁴⁸ including the use of the aerial perspective and single inscribed line to represent walls, the same technique found on the Tuba plan fragment.⁵⁴⁹ The open labyrinth gates are also drawn in a similar style to those found on city and building plans from the ancient Near East, with the used of a short pair of parallel lines, a stylistic convention found on both the Nippur⁵⁵⁰ and Tuba city plans.

The number of gates found on the Nippur city plan is also of significance for the Schøyen labyrinths, since there are multiple entrances in each wall, as was generally the case in sizeable Mesopotamian cities. If all but two of the gates on each of the Old Babylonian labyrinths are closed, they cannot be considered part of the ‘puzzle’ as they do not offer a choice of entrance for anyone trying to solve the labyrinth. If there are only two open gates, and therefore only two choices, the closed gates are essentially redundant. If this is the case, why would the scribe decide to include them at all? If the composer of these texts based their designs on the style of real cartographic pieces, however, the seemingly superfluous gates would certainly not be out of place, suggesting a desire to imitate a real city plan, and indeed a real city, more accurately.

These labyrinth designs display a high level of artistic skill, and were very likely created as an exercise in technical drawing and mathematical problem solving by an experienced scribe. Their origins appear to lie in the practice of Near Eastern cartography, and the presence of the closed ‘gates’ in each labyrinth certainly suggests that the scribe in question was attempting to imitate the plan of a city. The concept of the labyrinth as impregnable fortress or castle is common to many cultures, and seen in the myth of Theseus and the Minotuar, and perhaps the scribe was attempting to create a paragon of the ‘perfect city’, valued for its defensive properties and incomprehensibility to enemies.

⁵⁴⁸ Friberg 2002: 221

⁵⁴⁹ See pp. 207-211

⁵⁵⁰ See pp. 196-206

CHAPTER CONCLUSION

The city maps discussed in this chapter show a certain amount of variety in terms of their graphic characteristics, and it is clear that no ‘standard’ style of urban plan can be detected in the few examples collected here. Yet, as mentioned above, these plans all display conventions found in a number of other Mesopotamian map and plan groups, and they can therefore be placed firmly within the wider tradition of Near Eastern cartography. The Uruk plan is particularly difficult to interpret, due in part to its loss as well as the lack of information provided by initial reports on the piece. The method of aligning written captions towards the features they describe, in this case a single line city wall, is familiar from both field and building plans, however.⁵⁵¹

The scribe who composed the Nippur map took a different approach to depicting walls, using the double line method familiar from a number of building plans. This example displays a high level of technical skill, particularly in its accuracy of scale, which suggests that it is the product of a series of detailed surveys and extensive preparation, as evidenced by the unusually large tablet it is drawn on. Its identification with a known site, parts of which have been investigated in some of the more recent excavations carried out in the Middle East, places the map in a unique position, since its ‘accuracy’ can be compared with the archaeological remains of the city it depicts.

The identification of a number of the map’s features with these archaeological remains has somewhat overshadowed a number of issues with the map, however, specifically the lack of graphic differentiation between a number of features on the plan, such as the unlabelled line to the interior of the southwest wall. This lack of graphic clarity is typical of Near Eastern maps and plans, which rely heavily on the use of written captions to distinguish between features such as walls and canals. It must therefore be pointed out that the Nippur city plan, though one of the most studied maps from the Mesopotamia corpus, is still not wholly understood. It seems likely, however, that the map was commissioned in anticipation of a city-wide rebuilding programme during the Kassite period, suggesting that maps were used as planning tools not only in the context of individual buildings, but also in the wider urban environment.

⁵⁵¹ Field plans are discussed in chapter two and building plans are discussed in chapter three.

The Tuba map is similarly well-executed, though it appears to have fulfilled a completely different purpose to the Nippur plan. The Tuba map employs a number of techniques found on both city and building plans, as seen in the double line gate, and though the single line wall is less common to building plans, it is also found on the Uruk map and the plan of an unidentified city. The scribe also used the water-lining technique to illustrate the canal featured on the map, and though it is not the most common method used to indicate waterways, this technique is also familiar from a number of Old Akkadian plans.⁵⁵² It is clear that the Tuba map was not used as a planning tool, but rather as an illustration for the metrological commentary found on the tablet's obverse.

This type of cartographic application is extremely rare in the ancient Near East, though the building plans found on Gudea Statue B and the stele of Nebuchadnezzar II, discussed above, can arguably be counted amongst its examples. This type of plan differs to the majority of examples where additional written inscriptions, if included, primarily serve to explain the features drawn on the map and its purpose. In contrast, the drawings found in 'illustrative cartography' serve to further explain and enrich the ideas and concepts explored through the medium of writing. The most famous example of this type of plan from the ancient Near East, the Babylonian Map of the World, is discussed below.

Like the Uruk city plan, the fragment featuring part of an unknown city presents a number of problems, not only due to its poor state of preservation but also its unknown provenance. The brief captions found on the map are not sufficiently detailed to localise the features it shows, and its purpose remains unknown. As mentioned above, however, it displays a different combination of urban features, namely the relationship between a number of buildings and a road, which is not found on any other example from the ancient Near East.

Finally, the Old Babylonian labyrinth tablets offer an interesting addition to the maps discussed here, since they share a number of similarities with city and building plans. The same type of single line walls, for example, are found on the Uruk and Tuba maps, while the short projecting double dashes used to indicate doors and gates are familiar from the Tuba map and a number of building plans.⁵⁵³ The existence of these highly unusual drawings, so clearly influenced by Mesopotamian cartographic practice, perhaps suggests that city plans

⁵⁵² See chapter two

⁵⁵³ See chapter four

were more common in the ancient Near East than suggested by the few examples collected here.

CHAPTER SIX:

REGIONAL PLANS, THE MAP OF THE WORLD AND NAVIGATION IN THE ANCIENT NEAR EAST

INTRODUCTION

Three plans from the ancient Near East can be categorised in this study as ‘regional’, and are discussed in here in chronological order. A ‘regional’ map is defined as plan which shows an area containing multiple geographic elements, such as rivers, mountains, roads and cities, and the elements found on the first two examples primarily serve to contextualise the location of a particular feature shown on the map. The Old Akkadian Gasur map, for example, identifies the location of an agricultural estate within a river valley surrounded by mountain ranges and a number of towns and cities. Unlike the examples found in the field plan corpus,⁵⁵⁴ however, the purpose of this map is not to provide a survey of the agricultural estate itself, but rather to show its location within the wider landscape.

Similarly, the second example discussed in this chapter, a Middle Assyrian period map from Ashur, shows the location of a military camp in an open area bordered by rivers and possibly a road. This tablet is also inscribed with a caption indicating that it is the ‘sixth tablet (in a series)’, suggesting that maps may have been assembled from multiple tablets, of which this example represents only a single piece. The third example discussed here is a tablet in the Louvre collections known as the ‘Tablet Map’. This map contains graphic representations of a river and canal, a road and mountains, though the generic labels used by the scribe to indicate these features, such as ‘canal’ and ‘path’, do not afford any indication of the region it shows, or indeed its size. As such, its purpose is difficult to interpret, and it might be considered an aerial perspective drawing of a landscape which borrows some of the cartographic conventions found on other examples, rather than a map of a real geographic area.

⁵⁵⁴ For field and agricultural estate plans see chapter two

In addition to these regional maps, the most famous cartographic example from the ancient Near East is also discussed here, a tablet known as the ‘Babylonian Map of the World’. This map represents the full surface of the earth, comprised of a central inhabited space encompassed by a circular ocean, beyond which a series of triangular regions filled with exotic and mythical creatures are found. The map is not considered an accurate representation of Babylonian geographical knowledge, yet the scribe who drew the map composed it within the established cartographic traditions of the ancient Near East, using many of the graphic and technical drawing conventions found in many other examples. In this case, then, established cartographic principles were adapted in order to present an illustration which parallels many of the ideas and concepts found in the cosmological and literary texts of the ancient Near East, resulting in what is generally considered the first ‘world’ map from antiquity.

It will become clear through analysis of the examples discussed here that maps were not used as navigation tools in the ancient Near East, though the relationship between cartography and ‘way-finding’ is so entrenched in modern Western thought that such assumptions have clearly informed previous commentary made on some of these examples.⁵⁵⁵ It is more likely that the navigational systems of the ancient Near East were entirely oral, and the vestiges of these systems are found in a number of geographical texts such as itineraries, often described as ‘verbal maps’,⁵⁵⁶ which list sequential stopping points made on linear journeys. These texts offer an interesting counterpoint to the maps and plans of the ancient Near East, and their relationship with cartography is therefore also discussed here.

⁵⁵⁵ See for example Freedman on the Gasur map (1977: 32); and Gasche & de Meyer on the Sippar waterway plan (1980: 6)

⁵⁵⁶ Levine (1989: 90) for example, describes an Assyrian itinerary text describing the land around Zamua as a “verbal map”, while Hallo (1964: 62) makes a similar connection in his study on an Old Babylonian itinerary. Robson (2008: 60- 67) also discusses the ‘descriptive approach to landscape’ found in geographical texts such as itineraries.

THE GASUR MAP

The earliest example of a regional map, dated to the Old Akkadian period, is generally known as the ‘Gasur Map’, named after the site⁵⁵⁷ at which it was discovered during the fourth campaign by the Harvard-Baghdad School Expedition in 1931.⁵⁵⁸ The map shows an agricultural estate situated between two rivers in the middle of a mountainous region, represented graphically by a circle and identified with a brief caption as *ša-at a-za-la*, ‘belonging to Azala’(fig. 91).⁵⁵⁹ The map was found in a shaft sunk in room L4, located in the palace area of the site, which yielded two hundred and twenty four tablets dated to the Old Akkadian period. These finds are described by Meek as “largely...business documents”,⁵⁶⁰ including receipts, purchase records, interest and instalment records, inventories, texts associated with land records and lists of workmen, payroll tablets and letters.

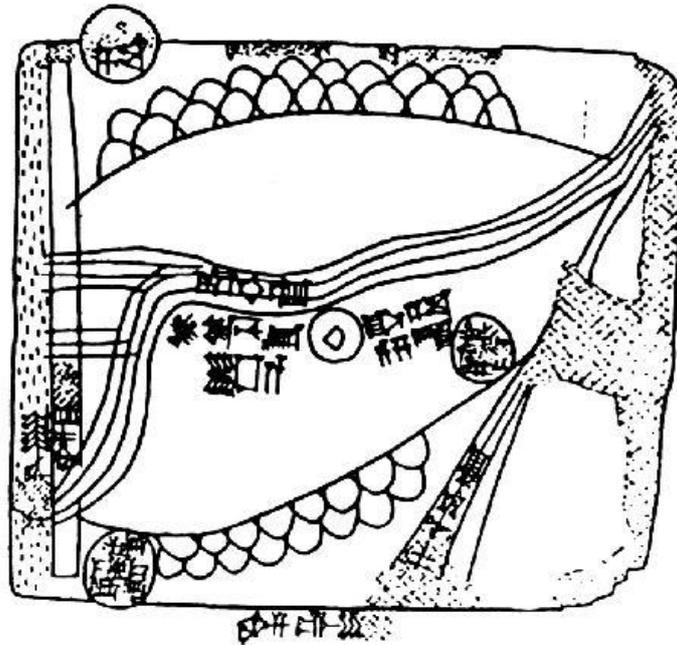


Fig. 91. Line drawing of the Gasur map

⁵⁵⁷ The site later became known as Nuzi in antiquity (modern Yorgan Tepe), and this map is often referred to as the ‘Nuzi Map’ in some secondary literature. It was named Gasur during the Old Akkadian period, however, and is therefore referred to as the ‘Gasur Map’ in this study.

⁵⁵⁸ The map was first published as a photograph in a brief note by W. F. Albright in the *Bulletin of the School of Oriental Research* 42 (1931), with some preliminary details taken from one of Meek’s letters. Meek gave the map a more comprehensive treatment with a translation in the *Annual of the American Schools of Oriental Research* 13 (1931) and *AASOR* 48 (1932).

⁵⁵⁹ Semitic Museum, Harvard University SMN 4172; clay; 6.8 x 7.6 cm. Provenance: Gasur, findspot: Room L4, Palace area.

⁵⁶⁰ Meek 1935: 2. Note that this achive was originally dated by Meek to the early Sargonic period, though Foster (1981: 39) has more recently offered a classical Sargonic dating (c. 2220 BCE) based on the palaeographic characteristics of the tablets.

The map itself appears to have been drawn free-handed, and depicts a region bound by mountain ranges on its upper and lower edges, illustrated by a series of semi-circles reminiscent of those on the Tepe Gawra vase.⁵⁶¹ Two sets of parallel lines which appear to denote rivers, inscribed with the same water-lining technique found on a number of contemporary field plans⁵⁶² and the Late Babylonian Tuba city map,⁵⁶³ emerge from the top of the partially damaged right hand side of the tablet, before branching to follow different courses. Both rivers are labelled, though only the last two signs on the lower river, *-ri-um*, are legible. The central river bears the legend *Ra-hi-um*, ‘flooder’,⁵⁶⁴ and follows a course through the centre of the map before splitting into three branches which empty into what appears to be a large body of water spanning the entire length of the left hand edge of the tablet. This body of water, which appears to be covered with small broken lines representing waves, was also originally labelled, though the inscription is now broken and only the last sign, *-gi*, can be read.⁵⁶⁵

The map is most famous for its inclusion of cardinal directions, with *IM-kur* ‘east’ written on the upper edge, *IM-mar-tu* ‘west’ on the lower edge and *IM-mir* ‘north’ on the left hand edge, while it can be assumed that on the now broken right hand side of the tablet there would have been the label for *IM-ulù* ‘south’. Indeed, the map is often referred to as the oldest oriented map in the world,⁵⁶⁶ though a number of contemporary estate plan fragments from Girsu published by Thureau-Dangin are also oriented.⁵⁶⁷

In addition to the natural features shown on the map, three cities are also noted, located on the upper left hand corner, the lower left hand corner and immediately to the right of the inscription in the centre.⁵⁶⁸ These cities are noted using circles with their names written inside, the same technique found on two Old Akkadian field plans,⁵⁶⁹ the Kassite period field

⁵⁶¹ See pp. 29-33

⁵⁶² See chapter two

⁵⁶³ See pp. 207-211

⁵⁶⁴ Meek 1932: 3

⁵⁶⁵ Meek, 1935, xvii, although he suggests the first sign may be *gur*.

⁵⁶⁶ See for example Millard 1987: 113

⁵⁶⁷ See chapter two

⁵⁶⁸ The practice of placing city names inside circles can be seen in two other examples from the ancient Near East, the Nippur field network map (see above, pp. 96-103, c.f. Meek 1931: 2) and the Babylonian map of the world (see below pp. 235-248). Since there are so few examples of maps with individual cities on them, however, it is impossible to state conclusively whether this was a convention of Mesopotamian cartography. It should also be noted that the system of placing city names inside circles is not consistently used on the Babylonian Map of the World.

⁵⁶⁹ See chapter two

network map from Nippur⁵⁷⁰ and the Babylonian map of the world, discussed below.⁵⁷¹ The names of two of these cities, however, are poorly-preserved, and only the name of the city in the lower left hand corner, *Maškan-dûr-ib-la*, can be read with certainty. Meek suggests that the name of the city found in the top left hand corner of the map possibly ends with *-ad*, however, and tentatively suggests the reading *Bi-ni-za-lia* for the city located to the right of the central circle.⁵⁷²

The focus of the map appears to be the small circle located at its centre containing a tiny depression, accompanied by an inscription to its left which reads 10 bùr 10 bùr – 6 gán ma₄-a, ‘10 bùr 10 bùr – 6 gán of cultivated land’, around 300 hectares.⁵⁷³ To the right of the circle, a caption reads *ša-at a-za-la*, ‘belonging to Azala’. It therefore appears that this circle indicates an agricultural estate, and that the purpose of the map is to show its location within the wider geographic context of the mountainous area shown on the tablet. When Meek originally translated the text on the map, he was concerned with identifying Azala as either a personal or place name,⁵⁷⁴ and sought to localise this estate in the area around Gasur somewhere between the Zagros Mountains in the east and the hills running north to south through Kirkuk. In this case, the waterways shown might be the lower Zab or the Radanu or Tigris, or possibly local canals.⁵⁷⁵

Other interpretations of the map as a plan showing caravan routes have also been offered, based on the possibility that the lined routes are roads rather than waterways.⁵⁷⁶ Freedman, for example, suggests that name *Maškan-dûr-ib-la* could be translated as ‘Fortress of Ibla’ which might be identified as an outpost of the northern Syrian city of Ebla.⁵⁷⁷ In this case, the map could represent trade routes between the Nuzi and Ebla regions. If the map does represent a caravan route, however, it would be unparalleled in the entire corpus of Near

⁵⁷⁰ See pp. 96-103

⁵⁷¹ See pp. 235-248

⁵⁷² Meek 1931: 2

⁵⁷³ Meek 1935: xvii

⁵⁷⁴ Meek (1931: 2) originally questioned whether these signs should be read together, as *Šâtazala*, or separately as *šât Azala*. He eventually settled on the latter interpretation since the inscription is written across two lines, therefore separating *ša-at* and *a-za-la*. Evidence below also supports the reading of *a-za-la* as an entire toponym.

⁵⁷⁵ Meek 1932: 4

⁵⁷⁶ The author of the note in which the map was first published, W. F. Albright (BASOR 42, 7-10), initially suggested it might be a map showing a caravan route, though this theory seems to have been later superseded by Meek’s estate plan suggestion. Freedman, however, favours Albright’s theory (1977: 32).

⁵⁷⁷ Freedman 1977: 32; see also Matthiae 1989: 374

Eastern maps which, as mentioned above, does not appear to contain any examples of maps or plans used for navigational purposes.⁵⁷⁸

Interpretation of the map has more recently been greatly aided, however, by the identification of many of its toponyms in a text known as the Early Dynastic list of geographical names (LGN) found at Ebla, with a duplicate set from Abu Salabikh.⁵⁷⁹ The text, which appears to be a compilation of smaller geographical lists, consists of two hundred and eighty nine city names divided into two groups. Group A represents cities located on waterways between the areas around Kish and Nippur, while group B contains a list of cities in more peripheral areas of Mesopotamia, including the Diyala region and Iran. Both the toponym sets in groups A and B are arranged geographically; in group A, the cities appear to be listed according to their location along various waterways,⁵⁸⁰ while in group B place names are probably listed according to their sequential position along specific land routes, much like a geographic itinerary.⁵⁸¹

LGN 220-230 in group B appears to list towns on a route between a city named Ebla,⁵⁸² located somewhere in the east Transgridian region, and Lullubum, located in the vicinity of the Tanjero river valley.⁵⁸³ The entry for LGN 220 reads *áb-la*, which Frayne identifies with the *Maškan-dûr-ib-la* of the Gasur map, and which also appears as Dûr Ebla in a number of Ur III texts, Dûr Ubla elsewhere in the Gasur archives, and even possibly as *eb-la* in the Sargon Geography.⁵⁸⁴

Toponyms from the Gasur map can also be identified in LGN entries 1-30, which lists towns along a land route from the Tigris east to an area described in Neo-Assyrian sources as the 'Land of Zamua'. LGN 28-30 appear to be associated with the area around Lake Zerivar in Kurdistan, and lists a *ra-ḥa*, *ra-ḥi* in entry 28, which can be identified with the *ra-ḥi-um* river on the map. Frayne also correlates *ba-na-a-za-NI* from LGN entry 29 with the *bi-ni-za-lia* located to the right hand side of the central estate of Azala. If Meek's reading of the last sign in the name *bi-ni-za-lia* is correct, this name can also be connected with the Neo-Assyrian

⁵⁷⁸ For navigation in the ancient Near East, see below pp. 249-252

⁵⁷⁹ Frayne 1992: 1. The Abu Salabikh texts were first published by Biggs, and the Ebla set by Pettinato. Frayne follows Pettinato's numbering.

⁵⁸⁰ Frayne 1992: 3

⁵⁸¹ Frayne 1992: 53. Near Eastern itinerary texts are discussed below pp. 249-252

⁵⁸² Note that this city is not identified with the well-known Ebla in ancient Syria.

⁵⁸³ Frayne 1992: 60-61

⁵⁸⁴ Frayne 1992: 60. Meek had also connected the *Maškan-dûr-ib-la* of the map with the Dûr Ubla of the archives, but had mistakenly identified this city with the more well-known Ebla of northern Syria. The Sargon Geography is discussed below, pp. 250

bu-na-a-si, located near the ‘Sea of Zamua’.⁵⁸⁵ Finally, entry 30, *u₄-zal*, can be identified with the apparent focus of the Gasur map, *a-za-la*.

The evidence from the LGN strongly suggests that the region depicted on the map should be identified with Lake Zerivar in modern Kurdistan, and a comparison between the ancient features on the map and a modern satellite photograph of this area shows a number of striking similarities (see fig. 92).

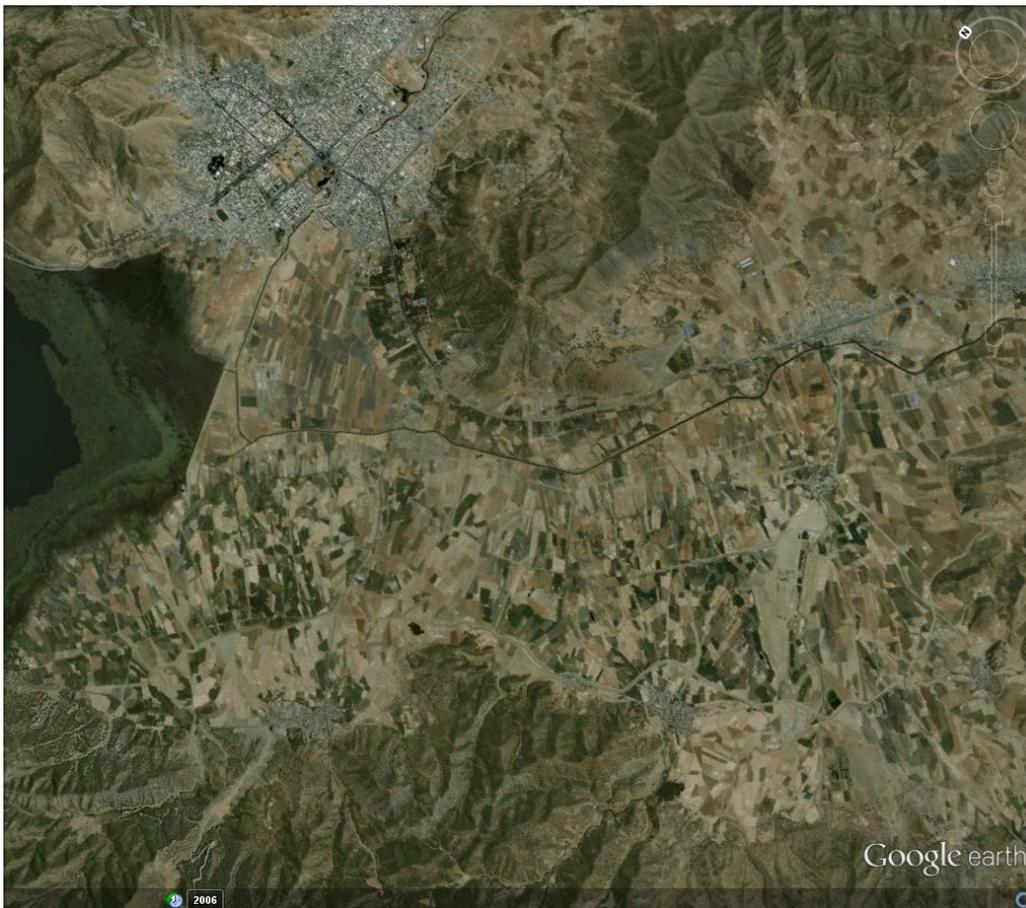


Fig. 92. Google earth image of the region depicted on the Gasur map oriented to the northeast with Lake Zerivar to the left (accessed February 2012)

⁵⁸⁵ Frayne 1992: 80-81

Comparing the ancient map to the modern topography of the Lake Zerivar region, the water at the edge of the ancient map appears to correspond to the lake, the ancient *ra-hi-um* to the course of the modern Cham-i-Gurun river and the [x x] *ru-um* of the ancient map with the Cham-i-Shiyan.⁵⁸⁶ With the identification of the region depicted on the ancient map, it is also now possible to confirm the orientation meant by the terms ‘east’, ‘north’ and ‘west’ found on the tablet. When adjusted to the angle depicted on the map,⁵⁸⁷ the satellite image shows that the ‘east’ of the tablet correlates to roughly northeast based on the magnetic compass (fig. 93).

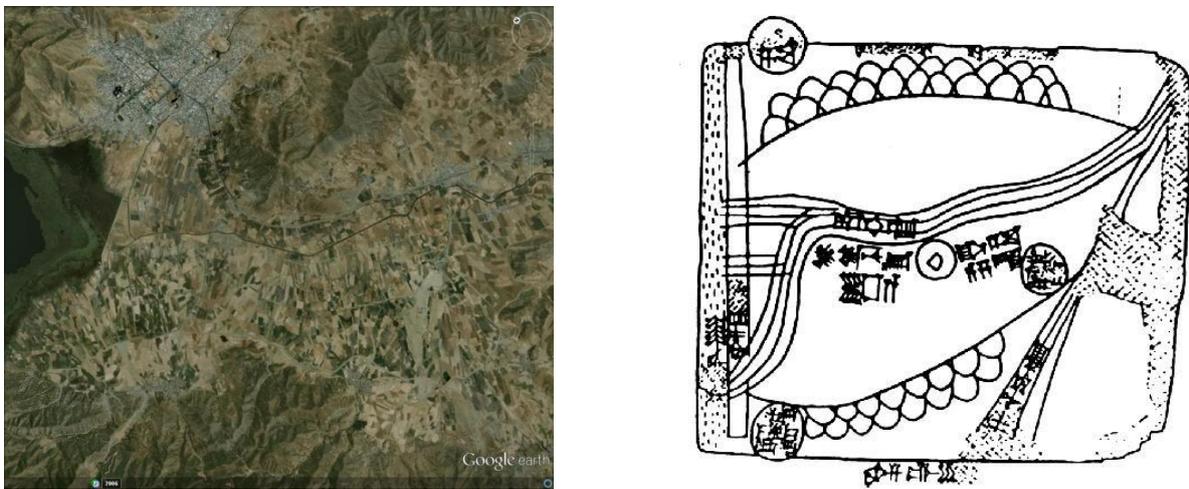


Fig. 93. A comparison between the Gasur map and a modern satellite photograph of the site around Lake Zerivar

Assuming that the side inscribed IM-kur, ‘east’ is at the top of the map, this would demonstrate that the map is oriented to the northeast rather than the northwest orientation found on other examples such as the Babylonian map of the world.⁵⁸⁸ Meek assumed that the

⁵⁸⁶ Frayne 1992: 81

⁵⁸⁷ It must be noted here that orienting the satellite image of Lake Zerivar to best ‘match’ the Gasur map is problematic, since the mountains and lake drawn on the ancient map cannot be aligned to completely correspond to the modern topography of the area. The orientation of the modern photograph can therefore only be taken as an approximation of the correct orientation of the ancient map.

⁵⁸⁸ See pp. 235-248

map was oriented to the east,⁵⁸⁹ however, based on the assumption that the inscriptions should be read from left to right. Yet this method of reading cuneiform did not become standard until five hundred years later, and during the Sargonic period lines of cuneiform were generally read from top to bottom. In this case, the Gasur map would be oriented with IM-mir, 'north(west)' at the top. Whether the map is oriented to the northeast or northwest, however, it confirms that the system of orientation used in the ancient Near East was inclined rather than perpendicular, as suggested by Unger.⁵⁹⁰

It can also be noted that the area shown on the map, measured according to the satellite image above, is roughly seven by five miles. This region would therefore have been relatively simple to 'survey' by site from an elevated position, such as the mountain ridges on either side of the river valley. It is therefore conceivable that this map was made through close observation of the landscape from a semi-aerial perspective, which would account for its accuracy.

While the evidence provided by the List of Geographical Names locating the region depicted on the Gasur map with the area around Lake Zerivar is compelling, questions remain over the purpose of the map and the reason for its excavation at Gasur, roughly 200 km from the area it charts. Meek's suggestion that the purpose of the map is to show the location of an estate belonging to Azala, now positively identified as a place name rather than a personal one, remains valid. The description of the land as 'cultivated' suggests a concern with its agricultural quality, and therefore an indication that the Gasur administration was interested in the estate's yields for taxation purposes. Indeed, the group of tablets with which the map was found form an homogenous archive largely concerned with agricultural administration,⁵⁹¹ and it therefore appears that the map demonstrates the extent of Gasur's administrative reach during this period.

⁵⁸⁹ Meek 1936: 224. Note that Meek used the Gasur map as proof in arguing against Unger's hypothesis that maps and plans were oriented with northwest at the top.

⁵⁹⁰ For Near Eastern orientation see pp. 24-27

⁵⁹¹ Visicato 2001: 468

AN ASSYRIAN MILITARY MAP

A fragmentary Middle Assyrian period plan from Aššur shows a river bordering a large open area, with an inscription identifying a military camp located on the left hand side of the fragment (see fig. 94).⁵⁹² The river is labelled ^{id}ud-kib-nun-ki, the Euphrates, and is represented by a set of simple double lines which follow a gently curving course parallel to the upper edge of the tablet, before splitting into two branches which extend towards the top and bottom of the left hand side of the fragment. The upper branch, narrower than the others on the plan, follows a short, straight path to the top of the map where the fragment is broken, while the lower branch curves in a wide arc towards the bottom left hand corner. In the small area on the left hand side of the plan, created by the edge of the tablet and the course of the river, a short inscription identifies a *karāšu* (ki.kal.bad), ‘military camp’.

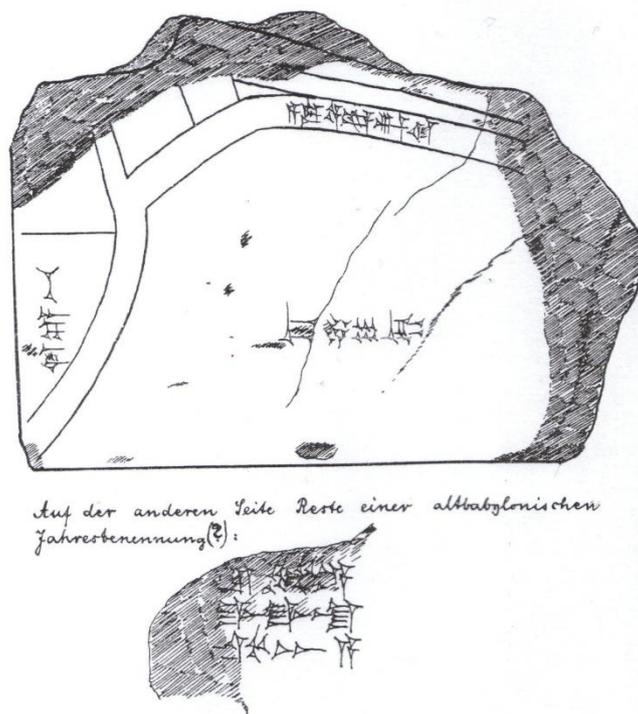


Fig. 94. Line drawing of a map showing the Euphrates river and a military camp

⁵⁹² Pergamon Museum VAT 9243; dating and dimensions unknown; clay. Provenance: Aššur, findspot unknown.

A set of parallel lines immediately adjacent to the Euphrates at the top of the map are unlabelled, and it is unclear what they represent. Paths and roads are very rarely indicated on Mesopotamian maps, though the Neo-Babylonian ‘Tablet Map’ discussed below⁵⁹³ also indicates a road graphically with the use of a set of parallel lines, much like a river, inscribed with the word *hūlu*, ‘path’. If these narrow parallel lines do represent a road, it is likely that the scribe used a written label to differentiate it from the rivers on the map, on a section of the tablet no longer preserved.

The square shape in the upper left hand corner is also unlabelled, though two possibilities can be considered for its identification. Firstly, if the lines did not originally extend much beyond the edge of the missing piece of tablet, they would form a square which could represent a building or part of the supporting irrigation system, such as a reservoir. It may seem unusual for the scribe to indicate one structure graphically whilst marking the location of the *karāšu* with a written label, yet it is likely that the military camp was not a permanent structure but rather a temporary site used by an expeditionary force. In this case, it would be logical to indicate the camp with a written label, and it cannot be discounted that the caption identifying the military camp may note its *intended* location rather than its current position.

The second possibility is that these lines represent another branch of the Euphrates. This interpretation raises a number of issues, most obviously the fact that this canal or river is much wider than the Euphrates which was surely the primary waterway. It can also be noted that scribe was careful to avoid crossing lines where the Euphrates branches at the left hand side of the tablet, while the lines in the upper left hand corner do not intersect cleanly with the main river. This could be an error on the part of the scribe however, who perhaps added this second branch to the map after completing the course of the Euphrates, neglecting to erase the joining line. The difference in width may also be the result of a lack of concern with genuine proportions, as seen on numerous building plans,⁵⁹⁴ and should perhaps not be considered indicative of the real scale of the rivers.

The most unusual aspect of this plan, however, is found in the central label which reads dub 6 *kām-ma*, ‘the sixth tablet (in a series)’. Donald⁵⁹⁵ suggests this caption might indicate that maps may have been ‘assembled’ from multiple tablets, and it is certainly conceivable that

⁵⁹³ See pp. 232-233

⁵⁹⁴ See chapter two

⁵⁹⁵ Donald 1962: 188

plans of large areas which contained numerous geographical features were, given the limited size of most clay tablets, divided in such a way.

The purpose of the map is assumed by Schroeder to be military, based on the presence of the 'military camp',⁵⁹⁶ though since the map is only partially-preserved, and indeed may have been part of a series, it is unknown whether the original plan contained features which were not of a military nature. If the camp was only a temporary site used by a campaigning army it is unlikely to have been used by the cartographer as a fixed point of reference on the map, however, and its inclusion therefore suggests that the tablet shows a survey of the area in which the camp was located or, alternatively, its proposed site.

There is a final aspect to the map, however, which throws doubt on this interpretation. The reverse of the tablet is inscribed with the remains of an Old Babylonian year list which is completely unrelated to the map on the obverse. Donald⁵⁹⁷ suggests this might indicate that the tablet is a copy of an Old Babylonian original, while Wiseman⁵⁹⁸ believes it is more likely that the tablet is a school text, where a trainee scribe used one side of the tablet to copy the year list and the other to practice drawing the map. If the tablet is a school text, it suggests that military maps were not unknown in the ancient Near East since, like the scholastic building plans,⁵⁹⁹ it would seem unusual to train scribes in the composition of technical drawings which had no practical application.

⁵⁹⁶ 1920: VIII (KAV 25, no. 25)

⁵⁹⁷ 1962: 188

⁵⁹⁸ 1972: 145 (see note 18)

⁵⁹⁹ See chapter four, and especially the Kish school texts pp. 150-154

THE LOUVRE ‘TABLET MAP’

The third regional map from the ancient Near East is much more difficult to interpret, since nothing is known of its provenance and it contains only brief, generic labels identifying the handful of geographic features drawn on the map (fig. 95).⁶⁰⁰ The tablet is much understudied,⁶⁰¹ and only tentative suggestions have been made about its purpose and the region it depicts. Dated to the Neo-Babylonian period, the map shows a mountainous region with a *nāru* ‘river’ running vertically through its centre. Unusually, this river is illustrated with a single line, with a branching secondary canal noted using the more familiar double line technique. A more sinuous double line near the top of the map is labelled *hūlu*, ‘road’, while a series of mountains on the right hand side of the map are represented by squares, □, accompanied by the label *šadu*, ‘mountain’.⁶⁰²



Fig. 95. Photograph of the Louvre ‘tablet map’

⁶⁰⁰ Louvre AOT 7795; clay; 12 x 7.5 x 2.9 cm. Provenance and findspot unknown

⁶⁰¹ The map is treated briefly by Arnaud (1982: 243), and is mentioned by both Millard (1987: 114) and Dolce (2000: 365 note 3).

⁶⁰² Arnaud 1982: 243

Arnaud suggests the map may depict a region to the east of Babylon, towards the Zagros Mountains, in which case the river in the centre might be the Tigris or Euphrates, both of which follow a course roughly parallel to the Zagros. However, given that the map contains only anonymous geographical features and is not oriented, it is extremely difficult to localise the region on the plan with any certainty. Indeed, the labels found on the map are so generic that it is conceivable that the area depicted is far smaller than that suggested by Arnaud; more specifically, terms such as ‘road’ and ‘river’ are only useful in the context of a map when they represent the only features of this type within the area shown.

The purpose of the map is also unclear; while the captions themselves are generic, the graphic representations of the landscape features give the impression that the scribe intended to accurately portray their physical characteristics. The canal, for example, is shown branching from the central river and following a diagonal course before changing direction near the lower left hand edge of the tablet. Similarly, the road at the top of the map has been drawn according to a specific path, following a sinuous course before disappearing into the mountains on the right hand side of the tablet.

Returning to the captions on the tablet, these entirely non-specific labels are reminiscent of the school text which shows a building or series of buildings inscribed with the label *a-šèr-tú* ‘sanctuary’.⁶⁰³ In the case of the school exercise, this generic label is used since it is highly likely that the plan represents a hypothetical building. The Louvre tablet map does not necessarily represent a school exercise, yet it can be related to the concept of a ‘hypothetical’ map, where the conventions and techniques found in maps of real areas are used to represent a hypothetical region which contains very general geographical features such as a road, canal and mountains. In this scenario, the non-specific labels would be perfectly adequate for explaining the *type* of feature which is graphically indicated, rather than specific canals, roads or mountain ranges.

⁶⁰³ See pp. 156-157

THE BABYLONIAN MAP OF THE WORLD

The most famous cartographic piece from the ancient Near East, which is also undoubtedly the most atypical, is commonly known as the ‘Babylonian Map of the World’, or ‘Mappa Mundi’.⁶⁰⁴ The extensive secondary literature on the tablet is testament not only to the interest of Near Eastern historians in the map, but also cartographic specialists outside the field of Assyriology.⁶⁰⁵ The most recent edition of the text on the map appears in Horowitz’s *Mesopotamian Cosmic Geography* (1998), accompanied by exhaustive commentary on the tablet’s cosmological and philological content. The cosmological significance of the Babylonian Map of the World and its relationship with other cosmological texts will therefore be treated only briefly here, and the map itself will be primarily contextualised within the wider history of Mesopotamian cartography, with particular reference to its technical aspects.

The tablet is probably a copy of an earlier version dated to the late eight or seventh century,⁶⁰⁶ and consists of a map drawn on the lower half of the obverse, while the upper half and reverse are inscribed with accompanying explanatory text (see fig. 96 and Plate X). The map itself shows the known world according to a strand of Babylonian cosmological thought, in which the earth is encompassed by a circular sea with a series of unknown regions beyond. The interior, inhabited part of the world shown on the map includes a number of written labels which indicate regions or cities, including Urartu (*ú-ra-áš-tum*), Assyria (^{kur}aš+šur^{ki}), Der (*dér*(BAD.AN)^{ki}), Susa (*[š]uša[n]* ([M]ÚŠ. [EREN]^{ki[?]}), Bit Jakin (*bit-ia-’-ki-nu*) and Haban (*ha-ab-ban*).⁶⁰⁷

The scribe was not consistent in his approach to how these cities and areas are indicated graphically, however, since some of them are noted with small circles like those found on the Gasur map⁶⁰⁸ and Nippur irrigation network plan⁶⁰⁹ while the names of others, such as Habban and Urartu, are written directly on to the map with no accompanying graphic symbol.

⁶⁰⁴ British Museum BM 92687; Late Babylonian; clay; 12.2 cm x 8.2 cm. Provenance: Sippar, exact findspot unknown.

⁶⁰⁵ The map portion of the tablet, for example, has been adapted to form the logo of the general cartography journal *Imago Mundi*, which has published a number of articles on the piece (see particularly Delano-Smith, C. ‘Imago Mundi’s Logo and the Babylonian Map of the World’. *IM* 48, 209-211).

⁶⁰⁶ See for example, the use of the term *marratu* for ‘ocean’, a Chaldean loanword not attested in Babylonian inscriptions until the ninth century, but only used as a reference for the ocean in its entirety in the eighth century, in an inscription of Sargon II (721-705) (Horowitz 1998: 25-26).

⁶⁰⁷ Horowitz 1998: 21-22.

⁶⁰⁸ See pp. 223-229

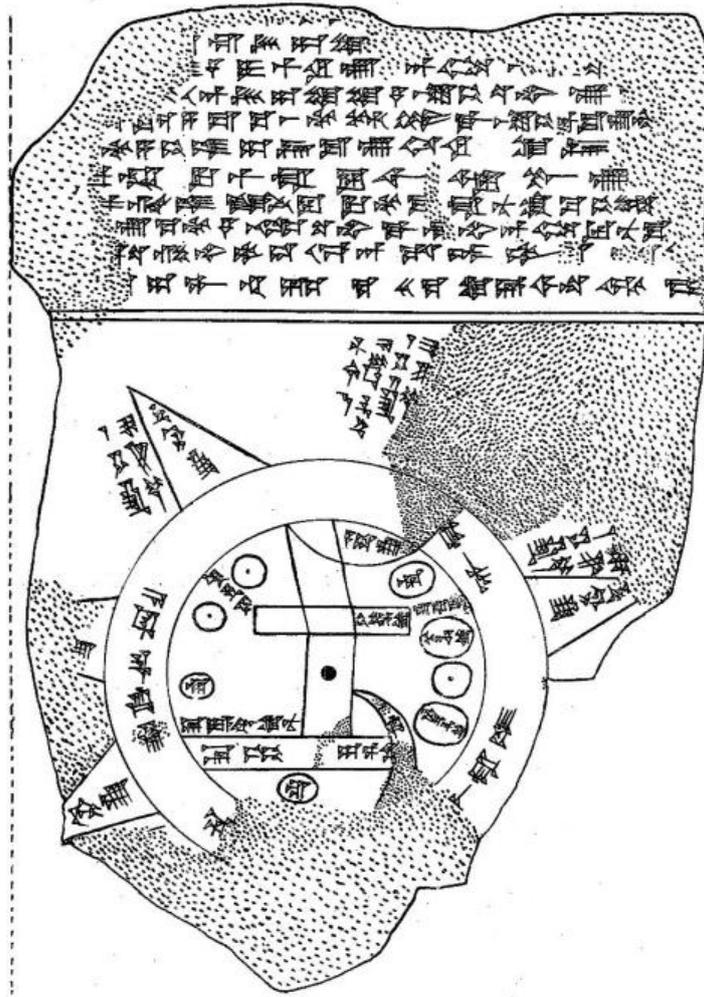


Fig. 96. Line drawing of the 'Babylonian Map of the World' tablet

Two circles are identified simply as 'city' (uru),⁶¹⁰ while the significance of the circles which contain only dots remains unclear. The city of Babylon itself (TIN.TIR^{ki}), though not completely central to the map, is located roughly in the middle this interior region and is indicated by a large rectangle (see fig. 97). The scribe also included a number of geographic features on the interior of the map, in the form of a semi-circular mountain, *ša-du-urū*, which recalls the style of the mountains found on both the Tepe Gawra vase⁶¹¹ and the Gasur map.⁶¹²

⁶⁰⁹ See pp. 96-103

⁶¹⁰ Horowitz 1998: 29.

⁶¹¹ See pp. 29-33

⁶¹² See pp. 223-229

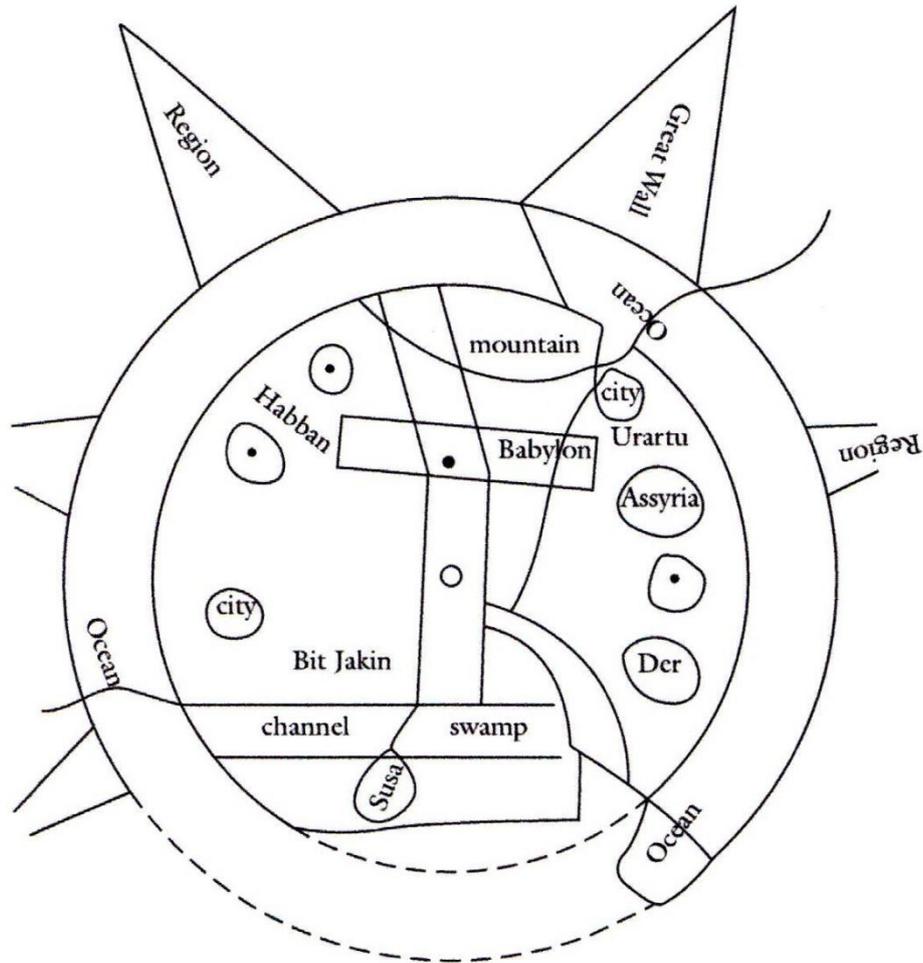


Fig. 97. Drawing of a detail from the 'Babylonian Map of the World'

A channel and swamp (*bit-qu* and *ap-pa-r[u]*) are indicated with the standard double-line method often used to indicate waterways, as is the central river which runs through Babylon. Though it is not accompanied by a written label, this river can almost certainly be identified with the Euphrates, on which Babylon was situated. In this case, the single mountain at the top of the map is likely to represent the hill ranges in southern Turkey where both the sources of the Euphrates and Tigris are found. Similarly, the swamp at the mouth of the river can be identified with the swamps along the lower Euphrates, and the channel with a waterway known to have connected the Euphrates with the Persian Gulf. A pair of lines which extend from the lower end of the Euphrates to the right hand edge of the swamp in a semi-circular arc cannot be identified with certainty due to a break in the tablet.⁶¹³

⁶¹³ Horowitz 1998: 28

The interior part of the map is enclosed by a pair of concentric circles, creating a band labelled in four places with the word ^{id}*mar-ra-tum*, ‘(salt) ocean’. Beyond the ocean is a series of five triangular regions identified by the scribe as *nagû* which, in this context, is likely to mean ‘distant, unspecified area’.⁶¹⁴ Since the lower portion of the map is damaged, a number of *nagû* appear to be missing, though as the text on the reverse of the tablet makes reference to eight of these regions, it seems likely that there were originally eight depicted on the map.⁶¹⁵ A series of captions next to each of these *nagû* offer brief descriptions of each region, though four of them are incomplete. The most detailed of the preserved captions refers to the *nagû* located in the central right position, followed here by the less well-preserved captions of the remaining four:

BÀD.GU.LA	Great Wall
[6] <i>bēru</i>	6 leagues
<i>ina bi-rit</i>	in between
<i>a-šar</i> ^d <i>šamaš</i>	where the sun
<i>la innammaru</i>	is not seen
(nu.igi.lá)	
<i>na-gu-ú</i>	Region
6 <i>bēru</i>	6 leagues
<i>ina bi-rit</i>	in between
[<i>na-gu</i>]-[<i>ú</i>]	[Regio]n
[(...)]	[(...)]

⁶¹⁴ Horowitz 1998: 30. For further discussion of the term *nagû* in Assyrian and Babylonian texts see Horowitz 1998: 30-33

⁶¹⁵ Horowitz 1998: 30

[<i>na</i>]- <i>gu-ú</i>	[Re]gion
[...]	[...]
<i>na-gu-ú</i>	Region
[8] <i>bēru</i>	8 leagues
<i>ina bi-rit</i>	in between ⁶¹⁶

It has been suggested that the description of the *nagû* ‘where the sun is not seen’ may demonstrate the Babylonians’ knowledge of polar night, a phenomenon which occurs inside the Arctic Circle.⁶¹⁷ It is more likely, however, a reference to either a region conceived as being perpetually dark, or is based on the observation that the sun does not appear to pass through the northern part of the sky when viewed from the latitude of Babylonia.⁶¹⁸

Eleven lines of text are partially preserved on the upper half of the obverse, which make reference to the god Marduk and a mixture of mythical and exotic creatures:

- 1’] x x x x [.....
- 2’] x *ālānu*^{meš} *ab-t[u-tu.....*
- 3’ [...*tam-tum rapaštum*^{tu}]^m *šá i-bar-ru-ú*^d *marduk ti-tú-^lri qé-r[eb-ša]*
- 4’ [...*b]i u ilānu*^{meš} *ab-tu-t[u] šá ina lib-bi tam-tim ú-še-[ši-bu]*
- 5’ [...x]-x-[šu] *iz-za-zu ba-aš-mu mušḥuššu rabû* (muš.ḥuš gal) *ina libbi*
- an-zu-ú girt[ablullû]* (gír.t[ab.lú.ùlu^{lu}]
- 6’ [x x a]*r-mu ša-bi-tum ap-sa-su-ú [n]im-ru ki-sa-r[i-ku]*

⁶¹⁶ Translated by Horowitz 1998: 22

⁶¹⁷ Unger 1937: 2, followed by Oppenheim 1978: 638 and Nemet-Nejat 1998: 94

⁶¹⁸ Horowitz 1998: 33

7' [x x n]ēšu (ur.mah) barbaru (ur.bar.ra) lulīmu (lu.lim) ù bu-ú-[šu]

8' [pa-gu]-^[ú]pa-gi-tum turāḫu (dàra) lu-ur-mu šu-ra-nu ḫur-ba-bi-li

9' [x x x] ú-ma-mu šá ina muḫḫi tam-tim gall[a-t]im^d marduk

ib-nu-šu-n[u-ti]

10' [x x^m] ^[d]ut-napištim(zi)^{tim} šarru-kin u nūr (zalag)-^d [d]a-gan šar bur-^{[ša-}

an[?]-ḫa]-a[n-da]

11' [x x k]a-ap-pi iššuriš (mušen)^{riš}-ma man-ma qé-reb-ši-na ul ^[i]-[du-ú]

Tranlsation:

1'] x x x x [.....

2']. the rui[ned] cities [.....]

3' [...the vas]t [Sea] which Marduk sees. The bridge in[side her[?]]

4' [...]. and the ruine[d] gods which he set[tled] inside the Sea

5' [...]. are present; the viper, great sea-serpent inside. The Anzu-bird,

and scorpi[on-man]

6' [...moun]tain goat, gazelle, zebu, [p]anther, bull-m[an]

7' [...l]ion, wolf, red-deer, and hye[na],

8' [monk]ey, female-monkey, ibex, ostrich, cat, chameleon,

9' [...] beasts which Marduk created on top of the res[tl]ess Sea,

10' [...U]tnapištim, Sargon, and Nur-[D]agan the King of Buršaḫa[nda],

11' [...w]ings like a bird, which/whom no one can com[prehend.]⁶¹⁹

Much of this text parallels themes in *Enuma Eliš*, the Babylonian account of the creation of the universe by the god Marduk, while the division of the animals into groups ‘settled inside the sea’ and ‘created on top of the restless sea’ echoes passages in the bilingual *Account of the Creation of the World by Marduk*. The three figures mentioned in line ten are a mixture of mythical and historical, but are united by their association with distant places; Utnapištim is the survivor of the Great Flood who is settled beyond the Waters of Death in *The Epic of Gilgamesh*, Sargon is included as the conqueror of the ‘known world’⁶²⁰ and Nu-Dagan, king of Buršaḫanda, appears in *The Šar Tamḫari Epic*, in one version of which undertakes the long journey from Akkad to Buršaḫanda.⁶²¹

Significantly, the scribe’s use of the word *tâmtu* for ocean found in both the obverse and reverse inscriptions, rather than the term *marratu* found on the map, suggests that the drawing and text may not have been composed at the same time. The text on the reverse of the tablet, however, specifically describes eight *nagû*, which is very likely the same number originally found on the map. It is therefore probable that the text on the reverse was written specifically to accompany the map, while the obverse inscription was added by a later editor who copied the original piece,⁶²² as stated in the colophon of the text on the reverse:

1'] [.....

2'*tab*[?]]-*ra*?-[*tî*?.....

3'*tam-t*]*u*₄ *ra-bi-tú* [.....

4' [*maḫ-ru*? *na-gu-ú*? *ina e-re-b*]*i-šú tal-l*[*a-ku 7 bēru*...

5' [*a-na šanû*^ú *na-gu-ú* [*a*]-*šar tal-la-ku 7 bē*[*ru*...

6' [....] x x x *šap*-[*liš/lat*...

⁶¹⁹ Translated by Horowitz 1998: 22-23

⁶²⁰ See the Sargon Geography, discussed below p. 251

⁶²¹ Horowitz 1998: 36

⁶²² Horowitz 1998: 26

7' [a-na šalšu] ^[šú] na-gu-ú a-šar tal-la-ku 7 bēru[...]

8' [iṣ-ṣu]-ru mut-tap-ri-ši la ú-šal-l[a-am uruḥ-šu]

9' [a-na re]-bi-i na-gu-ú a-šar tal-la-ku 7 bēru[...]

10' [x x x]-du ik-bi-ru ma-la par-sik-tum 20 ubān[u] (šu.s[i]) [...]

11' [a-na ḥanš]u ^[šú] na-gu-ú a-šar tal-[la]-ku 7 bēru [...]

12' [x x] mi-lu-šú 1 UŠ^{ta.àm} ṣu-up-pan x [...]

13' [x x x] x zi-nu-šú a-na aš-la^{ta.àm} [...]

14' [x x]-x-mi da-mi-šu ul im-mar [...]

15' [x x x] ni-il-lu aš-ri tal-la-[ku...]

16' [x x x x ta]-al-la-ku ^[7] b[ēru...]

17' [x x x x x x].A a-ši-li šá? ina? šu[?]]-[...]

18' [x x x x]-šú i-bi-ri [...]

19' [a-na šeššu^{šú}] na-gu-ú a-šar tal-la-ku [7 bēru...]

20' [x x x x x ina?] muḥḥi a-na-ku KIM/DÍM-m[u...]

21' [a-na sebî]^[i] na-gu-ú a-šar tal-la-ku [7 bēru...]

22' šá alpu(gu₄) qar-nu šak-nu [...]

23' i-[la]-as-su-mu-ma i-kaš-šá-du-^[ú] [...]

24' a-na [šam]anⁱ na-gu-ú a-šar tal-ka-ku 7 bēru[...]

25' [x x x x] a-šar ti-še- ' -ru ina ḥa-an-du-ri-šú ^[ú/šam]]-[x-x]

26' [x x x x x-t]i šá kib-ra-a-ti er-bet-ti šá kal x [...]

27' [x x x x x] x: qé-reb-ši-na man-ma la ^[i]]-[du-ú]

28' [x x x x x] x ki-ma la-bi-ri-i-šu ša-ṭi-ir-ma ba-r[i]

29' [x x x x x] *mār-šú šá^m iṣ-ṣu-^rru* [mā]r^{md} ea(idim)-bēl(en)-il[^tmeš]

Translation:

1'] [.....

2'wo]nde[rs?.....

3'] great s[ea?.....

4' [The first? region?, when one ent]ers it you tra[vel...leagues...

5' To the second region] where you travel 7 lea[gues

6' [...].be[low...

7' [To the thir]d region, where you travel 7 lea[gues...

8' A winged [bi]rd cannot safely comp[lete its journey]

9' [To the fo]urth region, where you travel 7 lea[gues...

10' [...]. are thick as a *parsiktum*-measure/vessel, 20 finger(s) [...

11' [To the fif]th region, where you travel 7 leagues [...

12' [...is] its height/flood; 840 cubits is its. [...

13' [...]. its frond/rain; as much as 120 cubits is [its...

14' [...]. its blood he does not see [...

15' [...which we c]limb[?], where you trave[l...]

16' [.....you/] I will travel 7 le[agues...

17' [.....]. the departure which? Is in. [...

18'[.....] its [...] he crossed [...

19' [To the sixth] region, where you travel [7 leagues...

20' [.....on?] top, I.[...]

21' [To the seven]th region, where you travel [7 leagues...

22' where the cattle equipped with horns [...]

23' they run fast and reach [...]

24' To the [ei]ghth region, where you travel 7 leagu[es...

25' [...the p]lace where...dawns at its entrance[?]

26' [.....]. of the Four Quadrants of the entire. [...]

27' [.....].: which no one can compre[hend]

28' [.....]. copied from its old exemplar and colla[ted]

29' [.....] the son of Iṣṣuru [the descend]ant of Ea-bēl-il[ī]⁶²³

It can be assumed that the first section of this text contained a description of the first *nagû*, which is now too poorly preserved to allow much interpretation of the opening lines. The remaining sections yield at least some information on how the rest of these *nagû* were conceptualised, however, following the form of a narrative presented as a linear journey. One travels seven leagues either into or between each region, which are characterised by the presence of various animals, such as the horned cattle in the seventh region, or specific phenomena, such as the rising of the sun in the eighth region. As mentioned above, the final section provides a colophon stating that the tablet is a copy of an older version collated by a scribe whose name is now missing, though he is identified as the son of Iṣṣuru, descendant of Ea-bēl-ilī. This may explain why there are three unnamed cities or regions on the map indicated by circles, since it is possible that their names were no longer preserved on the tablet from which the later editor copied the map.⁶²⁴

⁶²³ Translated by Horowitz 1998: 23-25

⁶²⁴ Howowitz 1998: 26

It is clear that the purpose of the Babylonian Map of the World is primarily cosmological, and its relationship with other cosmological traditions of the ancient Near East has been well-established.⁶²⁵ Its purpose was therefore not to offer a cartographically ‘accurate’ account of Near Eastern geography, but rather to illustrate a specific conception of the world according to Babylonian cosmological tradition, and it is therefore entirely unique in the Mesopotamian cartographic corpus. Despite its fundamental differences to other maps and plans from the ancient Near East, however, there is evidence that the scribe was working with a number of set cartographic rules which were adapted to suit the cosmological purpose of the map.

The depictions of the geographic features on the map follow established conventions; the double line rivers, for example, and the cities indicated with circles. The scribe seems to have drawn the map according to the Babylonian system of orientation, since it appears from the angle at which the Euphrates enters Babylon that the map is oriented to the northwest.⁶²⁶ There are a number of obvious inaccuracies on the on the map, however, not least the relative sizes of the cities and countries indicated. The region of Assyria, for example, is the same size as the city of Der, and both are smaller than the rectangle which marks the site of Babylon.⁶²⁷ Many of their relative locations are also inaccurate and major geographic features, such as the Tigris River, are omitted completely.

The primacy of Babylon in the world-view represented by the map is clear; it occupies the most central position and is marked with its own singular geometric shape, an expression of what is known as ‘representational hierarchy’ in cartographic theory.⁶²⁸ It has been pointed out, however, that Babylon is not in fact located at the most central point on the map, which is marked by a dot incised in the clay. It is likely that this dot carries no cosmological significance, however, but is rather related to the mechanics of technical drawing. The fine lines of the map suggest the scribe used a pointed tool to execute the drawing, and the straightness of the edges of the *nagû* indicate that he also made use of a ruling instrument.

The concentric circles which form the band of ocean, however, would have been much more difficult to draw and they are extremely well-executed here, with the scribe able to achieve an accurate circular shape of consistent thickness for the ocean band. Given the numerous examples of maps and plans on which scribes were unable to draw straight double-line walls

⁶²⁵ For a more in-depth analysis of the cosmological content of the text and comparison with other Near Eastern traditions, see Horowitz 1998: 20-42.

⁶²⁶ Unger 1935: 318; Oppenheim 1978: 638

⁶²⁷ Horowitz 1998: 27

⁶²⁸ Harley 1989: 292

of a consistent thickness without the use of a ruling implement,⁶²⁹ in addition to the fact that the smaller circles which represent the cities on the map are not perfectly round, it is clear that the scribe would not have been able to draw such accurate concentric circles without the aid of a drawing tool.

The incised dot in the centre of the map, which is equidistant from the preserved parts of both the inner and outer lines of the band of ocean, indicates that the scribe used the ancient equivalent of a pair of compasses to draw these circles. There are no surviving artefacts which can be identified with such an instrument, though this tool might have taken a form as simple as a stylus or stick inserted into the soft clay in the middle of the map, which was then attached to a piece of string with another drawing instrument at the other end. The scribe could then draw an accurate circle before widening the string to create a larger arc for the outer band of the ocean. As mentioned above, the same type of instrument appears to have been used to draw a number of circular ‘cities’ in aerial perspective which feature in a series of mathematical texts.⁶³⁰

It has also been noted that the map shares many characteristics with, and appears to anticipate, a number of Hellenistic maps and treatises on the form and nature of the terrestrial world.⁶³¹ Unfortunately, none of these maps survive, though textual evidence provides a good basis for their reconstruction. Herodotus, for example, makes reference to ‘world maps’ in Book IV of *The Histories*:

“I am amused when I see that not one of all the people who have drawn maps of the world has set it out sensibly. They show Ocean as a river flowing around the outside of the earth, which is as circular as if it had been drawn with a pair of compasses, and they make Asia and Europe the same size.”⁶³²

Herodotus makes no explicit reference to a particular map, though similarly conceived illustrations of the earth are known from a number of other sources. One of the most well-known is that of Anaximander of Miletus (610-547), a Greek philosopher and geographer

⁶²⁹ See particularly chapter four, where there are obvious differences between building plans which were drawn ‘free-handed’, and those where a ruling implement was used.

⁶³⁰ See chapter pp. 23-24

⁶³¹ West 1971: 87; Michalowski 2010: 148

⁶³² Herodotus *The Histories* IV: 36. Translated by Waterfield (1998)

who is reported to have composed a map depicting a central continent surrounded by a circular ocean. Though neither his map nor his cosmological writings survive, modern reconstructions of Anaximander's map based on reports in other Greek sources show a version of the earth similar to that depicted on the Babylonian Map of the World (see fig. 98).⁶³³

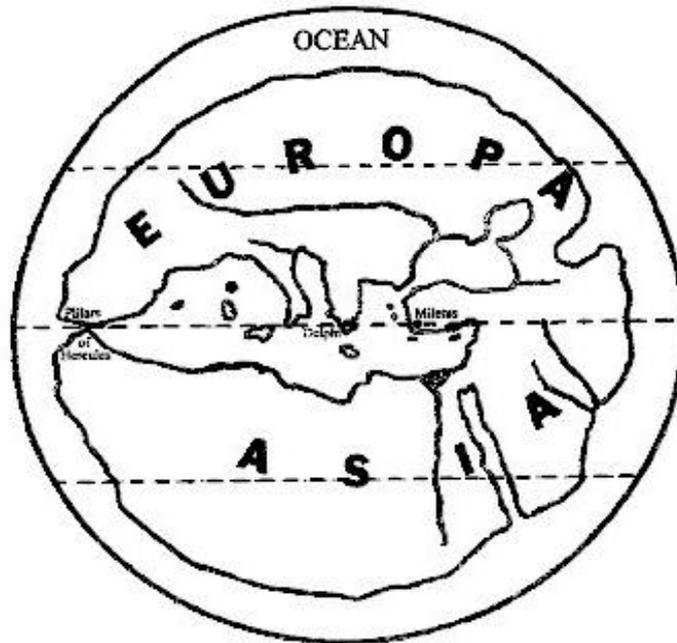


Fig. 97. Reconstruction of Anaximander's world map

The widespread adoption of the concept is also evidenced by references to circular maps in Aristotle's *Meteorologica*, and later descriptions in both Eratosthenes (276-195 BCE) and Agathemerus (early third century CE) of round maps with Delphi at their centre.⁶³⁴ The similarities between these Greek maps and the ideas shown in the Babylonian Map of the World are clear, though it has been noted that the Babylonian version is more firmly rooted in mythological thinking than Anaximander's example.⁶³⁵

⁶³³ Couprie 2011: 79

⁶³⁴ Couprie 2011: 79. It is not inconceivable that the maps described here by these later Greek writers are all references to Anaximander's map, rather than multiple examples. The concept clearly gained a certain amount of currency, however, as shown by its transmission to later Greek cosmological thought.

⁶³⁵ Couprie 2011: 86

There is little evidence that the Babylonian Map of the World offers a representative account of real Babylonian geographical knowledge, however, and it should not be assumed that the scribe was attempting to draw a ‘geographically accurate’ map of the earth. Rather, it has been noted that the map should be viewed as an expression of the ‘Babylonio-centric world view’,⁶³⁶ concerned with the nature of the boundaries between a known interior and an unknown exterior, with the city of Babylon at its centre.

An interpretation of the map framed only within the concepts of Babylonian cosmology or self-reflective ideology, however, neglects one of the most unique aspects of the tablet; that of its mixture of graphic map and descriptive journey, the only example from the ancient Near East to combine these concepts. In this way, it can be compared with the handful of cartographic examples which can be considered ‘illustrative’, such as the Tuba city map and the temple plans found on Gudea Statue B and the stele of Nebuchadnezzar II⁶³⁷ discussed above, since it functions as a graphic guide to the textual aspect of the tablet.

Furthermore, the text on the reverse shares a number of characteristics with a Near Eastern textual genre known as the ‘itinerary’. These documents describe the courses of journeys or military expeditions divided into stopping points, usually with a brief note of the time spent at each stage. Indeed, the level of detail provided by itineraries about the journey they describe is often so brief as to appear almost perfunctory, with little description or information given for each stopping point.

Like itineraries, however, the text on the Babylonian Map of the World describes a linear journey measured using the *bēru*, or ‘double hour’ unit, and is the only cartographic example from the ancient Near East which engages in some way with the concept of navigation, even if the landscape it describes is essentially mythological in character. It is the written portion of the map which deals with navigation however, and not the graphic, which hints at navigational methods rooted firmly in the verbal rather than the visual. Where modern Western cartography is heavily identified with orienting oneself in the world and using maps as way-finding tools, it seems that in the ancient Near East this function was fulfilled through verbal rather than graphic media.

⁶³⁶ Michalowski 2010: 148

⁶³⁷ For Gudea Statue B see pp. 146-159, for the Stele of Nebuchadnezzar II see 182-185

NAVIGATION IN THE ANCIENT NEAR EAST: ‘VERBAL’ MAPS AND THE LIMITS OF GRAPHIC CARTOGRAPHY

As mentioned above, none of the maps and plans discussed in this thesis appear to have functioned as navigational tools, primarily due to the fact that cartographic pieces tend to fulfil this purpose only when they can be accurately reproduced in large quantities and widely disseminated. Such a change did not occur until the advent of the printing press in the fifteenth century CE, and the association between cartography and navigation is essentially a product of a more modern age. The limits of Near Eastern scribal technology and its capacity to reproduce high volumes of identical graphic maps does not, however, preclude the possibility that such navigational maps were occasionally produced and used by individuals in Mesopotamia. Yet this seems unlikely, given that there must have existed an established method of communicating routes and journeys in the ancient Near East, which is unlikely to have been wholly supplanted by graphic maps.

This system was probably almost exclusively oral, where knowledge of established roads and routes between areas was disseminated through spoken traditions and instruction. These oral traditions can be detected in a number of textual genres, however, which form an interesting comparison to the graphic maps which form the main focus of this study. While a detailed analysis of these texts is beyond the scope of this thesis, some brief observations will be made here about the written documents which can be considered ‘verbal cartography’, and their relationship with the graphic maps of the ancient Near East.

The use of established routes which were transmitted verbally is indicated in a letter⁶³⁸ from the Mari archives between the governor of Mari Yasmah-Addu and his father the Assyrian king, Shamshi-Adad I. It appears that Yasmah-Addu was preparing to undertake a military campaign to Qatna, and in his letter Shamshi-Adad instructs his son on the best route to lead his troops through the deserts beyond the Euphrates. The king considers three possibilities, the ‘high’ (*elîtum*), ‘middle’ (*qablîtum*) and ‘low’ (*šaplîtum*) routes.⁶³⁹ Shamshi-Adad describes each of these routes as a series of sequential steps, though only the text concerned with the ‘high’ route is well-preserved enough to reconstruct its course: “If the army is taking

⁶³⁸ ARM I 85

⁶³⁹ Charpin 2010a: 241

the high route, from the heart of the country to..., Qirdahat, Dêr, Malhatum and Tuttul; then, from Tuttul they will reach Abattum.”⁶⁴⁰

A more detailed description of such a linear journey appears in another letter⁶⁴¹ from the Mari archives which describes a route along the Ḫābūr Valley, written by Yarîm-Addu who can be identified with a nomad chief active in the Mari area under the reign of Yasmah-Addu, the governor who was the recipient of the letter mentioned above. The correspondent in Yarîm-Addu’s letter is addressed by him as ‘my lord’, and is warned that he must follow a specific route while travelling along the Ḫābūr.⁶⁴²

It is unclear why the recipient is instructed to follow the route outlined by Yarîm-Addu to ensure his safety, and this letter suggests there was a ‘standard’ road along the Ḫābūr which could not be used in this case due to exceptional circumstances. Again, these instructions take the form of a sequence of toponyms; “...from Qaṭṭunân to Latihum, from Latihum to Makrisa; at Zahatum, at Qirdahat, at Yahasân, at Appârum, at Tarnip and at Zalluhân...”. This prescribed journey is referred to by Yarîm-Addu as a *gerrum*, translated by Charpin as ‘itinerary’.⁶⁴³

The List of Geographic Names which can be used to identify the toponyms found on the Gasur Map follows a similar system, in which place names are listed sequentially along specific land routes.⁶⁴⁴ Itinerary texts are also found in monumental contexts, such as an Old Akkadian limestone fragment engraved with an inscription known as the ‘Sargonic Itinerary’. The eight lines of preserved text on this fragment record a series of toponyms which, given the monumental nature of the inscription, Foster assumes to refer to a royal campaign preserved here not only for commemorative purposes but also perhaps as a source of military intelligence.⁶⁴⁵

The military nature of certain itineraries is also demonstrated by an Old Babylonian example⁶⁴⁶ which describes the route taken by what was probably a campaigning army, as suggested by references to troops in the text, between Larsa in southern Mesopotamia and

⁶⁴⁰ Charpin 2010a: 240

⁶⁴¹ A. 1053

⁶⁴² Charpin 2010b: 37

⁶⁴³ Charpin 2010b: 34. Though, as Charpin notes, this term encompasses a number of meanings. Cf. CDA *gerrum* (p. 92): “way; caravan; (military) campaign.” Also topographic: “road, path”.

⁶⁴⁴ Frayne 1992: 53.

⁶⁴⁵ Foster 1992: 73-75

⁶⁴⁶ YBC 449

Emar in northern Syria. The itinerary lists a series of stopping points made on the journey, which appear to be roughly 25-30 km apart, in addition to the number of days spent at each location. The inbound journey is also recorded in the itinerary, while the text's colophon records the total length of the trip: *napharum warhū 6 ūmū 14 kam ú-ši a-na ta-ri-ia*, "A total of 6 months (and) 14 days elapsed until my return."⁶⁴⁷

The text is recorded on three duplicates which, as Hallo points out, suggests that it was not written simply for administrative purposes but rather as the basis for a literary text or monumental inscription. The author is likely to have been either a royal official or the king leading the campaign who, based on the starting point of the expedition in Larsa and the toponyms referenced in the itinerary, Hallo identifies as the King of Larsa, Rim-Sin (1822-1763).⁶⁴⁸ A literary text based on this account might also contain a description of the battle which presumably took place at the end of the journey in Emar, which is entirely omitted from the itinerary.

The conceptualisation of the landscape as a series of sequential stopping points, as opposed to the 'vertical' perspective of a map which encompasses multiple points simultaneously, is surely born out of the linear routes which were established and used by commercial travellers. The concept of a linear route as a navigation tool is partially adapted to become a descriptive device on the Babylonian Map of the World, where the 'journey' laid out in the text on the reverse provides a framework for describing each of the regions featured on the map. A similar device is also used in a Late Babylonian text known as the 'Sargon Geography' which purports to describe the empire of Sargon of Akkad (2340-2284), the Old Akkadian king who assumed semi-legendary status by the Neo-Assyrian period, when the text was composed.

The Geography can be divided into four sections, the first two of which list areas and their borders. These areas are defined by two geographic points, much like the city districts listed in the Babylonian topographic text *Tintir*,⁶⁴⁹ such as: *ultu ú-ru-na adi ši-nu KUR lul-lu-bi-t^{ki}*; *ultu eb-lá adi bit-na-ni-ib KUR ar-ma-ni-t^{ki}*; *ultu ši-iz-za-at adi abul^d-adad KUR gu-ti-um^{ki}*,

⁶⁴⁷ Goetze 1953: 55

⁶⁴⁸ Hallo 1964: 84-85

⁶⁴⁹ See pp. 207-211

“from Uruna to Šinu is the Land of Lullubi; from Ebla to Bit-Nanib is the Land of Aramni; from Hizzat to Abul-Adad is the Land of Akkad”.⁶⁵⁰

The third section lists a series of regions and their circumferences, expressed in *bēru*, a ‘double hour’, the same temporal unit of measurement used on the Babylonian Map of the World: 40 *bēru tal-bit KUR mar-ḥa-ši^{ki}*; 1 *šu-ši bēru tal-bit KUR tuk-riš^{ki}*, “40 leagues is the circumference of Marḥaši. 60 leagues is the circumference of Tukriš.”⁶⁵¹ The fourth section describes various lands and the peoples who inhabit them, such as the Suteans and Lullubeans. Sargon himself is described in lines 4 and 5 as the ruler of the world: *...na-ši bilti ba-bíl igisê a-na šarru-kēn, šá nišē^{meš}/mātāti kal kiš-šá-ti i-bé-lu-ši-na-ti i-bé-lu-šu-nu-ti*, “...bearer of tribute and carrier of gifts to Sargon, who ruled the lands/peoples of the whole world.”⁶⁵²

The fundamental difference between graphic maps and linear descriptions of the landscape is one of perspective; like much of modern Western cartography, the graphic maps of the ancient Near East can be described as ‘vertical’, since they approach the landscape from an aerial perspective. In contrast, the geographic texts which describe routes and journeys take a ‘lateral’ approach, where the landscape is ‘mapped’ from the perspective of the ground.⁶⁵³ It can also be noted that modern studies suggest that this is how most of us view the world, navigating with the use of a ‘mental itinerary’ rather than a visual map.⁶⁵⁴

The uniqueness of the Babylonian Map of the World is found in its use of both these approaches, demonstrated by the ‘lateral’ journey described in the text on its reverse, and the ‘vertical’ perspective of the map which illustrates it. The simultaneous use of these perspectives is significant, since it demonstrates an appreciation of both the world as experienced by the individual on the ground, and the full ‘knowledge’ of the earth afforded by a detached viewpoint. The marriage of these perspectives lies at the heart of cartography, and the Babylonian Map of the World is the only example from the ancient Near East in which both approaches sit side by side.

⁶⁵⁰ Lines 12-14, translated by Horowitz 1998: 68-69

⁶⁵¹ Lines 33-34, translated by Horowitz 1998: 70-71

⁶⁵² Lines 4-5, translated by Horowitz 1998: 68-69

⁶⁵³ Ingold 2000: 227

⁶⁵⁴ Harley & Woodward 1998: 4

CHAPTER CONCLUSION

While the maps discussed in this chapter all depict areas containing multiple geographic elements, such as rivers and mountains, the purpose of each example appears to differ. The Gasur Map appears to show the location of the central estate ‘belonging to Azala’ within the wider geographic context of a river valley on the edge of Lake Zerivar, and functions in much the same way as the ground plan which shows a building containing rolling mills, and another which indicates the presence of round items in front of a ziggurat, since the purpose of all these plans is to indicate the location of a particular feature.

The Assyrian ‘military’ map may have had a similar function, either as a plan showing the location of the camp within the context of the other features drawn on the tablet, or perhaps as a survey of a region showing a potential site. The presence of the inscription: *dub 6 kámma*, ‘the sixth tablet (in a series)’ also offers the intriguing possibility that detailed maps of larger areas were not necessarily limited by tablet size, since a map could be drawn across multiple tablets. If the Old Babylonian year list on the reverse of the tablet does, as Wiseman suggests, indicate that the tablet is a school text, this need not fundamentally alter its interpretation. More specifically, it can be assumed that a school text which represents a hypothetical map is likely to be representative of the type of map which scribes would later be expected to draw, which in this case functions as an indicator of the camp location.

The Louvre ‘tablet map’ is much more difficult to interpret, since very little is known of its provenance or the size of the region it depicts. As mentioned above, however, unless the area shown in the map is localised enough to contain only a handful of geographic features, such as one road and two canals, the entirely generic labels indicate that the map had no real cartographic function beyond its aesthetic imitation of a ‘genuine’ map of a real area.

The Babylonian Map of the World is clearly anchored in the cosmological beliefs of the ancient Near East, and though it should not necessarily be considered a true measure of the Babylonians’ ‘real’ geographical knowledge, it displays a number of conventions familiar from many other cartographic examples. Its purpose as illustration of the textual description of the earth’s regions found in the text on the tablet also links it with other examples such as the Tuba map⁶⁵⁵ and the building plans found on Gudea Statue B⁶⁵⁶ and the Stele of

⁶⁵⁵ See pp. 207-211

⁶⁵⁶ See pp. 146-159

Nebuchadnezzar II,⁶⁵⁷ while it also offers a bridge to the ‘verbal’ maps known from texts such as itineraries, which describe routes and journeys.

It must be noted that these itineraries are not general ‘route planners’, but rather accounts of specific journeys, recorded as both sources of military intelligence and as the basis of literary accounts of campaigns. They do, however, indicate how the Mesopotamians probably navigated the landscape, conceptualised as a series of linear routes punctuated by stopping points. There is likely to have been much shared geographical knowledge amongst the inhabitants of the ancient Near East which was disseminated orally, and is therefore not preserved in the historical record. The existence of established routes, however, is indicated by Shamshi-Adad’s letter to his son, in which he makes reference to the ‘high’, ‘middle’ and ‘low’ routes.

It may be tempting to draw a division between the types of geographic area which were recorded cartographically and those which were recorded verbally, based on the size of the region depicted. It is clear that a number of itineraries record journeys across extremely large areas; the Old Babylonian itinerary from Larsa to Emar, for example, records a route taken across parts of modern Iraq, southern Turkey and Syria. The scale of the areas shown on the regional maps is difficult to compare, however, since only one of them can be reconstructed with certainty. The Babylonian Map of the World does not offer a geographically accurate account of the earth, nor was it supposed to, and must therefore be discounted, while the areas shown on the Ashur and Louvre maps are unknown and thus cannot be quantified. The size of the region depicted on the Gasur map is roughly seven by five miles, and therefore significantly smaller than the areas covered by the itineraries.

It is unlikely that there was considered a limit to the size of the areas shown on maps in the ancient Near East, however, particularly if they could be drawn across multiple tablets as suggested by the Ashur map, and the difference between the regional maps and geographical texts appears to be one of function. Specifically, the regional maps tend to focus on the location of a single feature with a wider geographic context, while the itineraries follow routes which describe the linear distribution of multiple locations. It is therefore clear that maps were not conceived as navigational tools in the ancient Near East, a role which was already fulfilled by shared knowledge of established routes and roads. While the usefulness of a graphic map over such a system, with which one can navigate from any number of points

⁶⁵⁷ See pp. 182-185

shown on map to another, is clearly preferable in many ways to the limits afforded by following a single path, the circumstances under which graphic maps could fulfil this function would not come into being until millennia later, when the printing press propelled cartography into the modern era.

CONCLUSION

The tablets and artefacts discussed in this thesis represent finds from the full spectrum of Near Eastern history, and their examination here as a complete collection for the first time has revealed that there was an established cartographic tradition in Mesopotamia, and that maps and plans were made in order to fulfil a variety of purposes. In addition to analysis of the characteristics and trends found in individual cartographic groups, the investigation of all the extant maps and plans from Mesopotamia in this thesis has also created a critical framework within in which future finds can be examined, while contextualising Near Eastern maps within the rapidly developing discipline of historical cartography.

It has been shown in this thesis that the extant maps from the ancient Near East are overwhelmingly provenanced to southern Mesopotamia, with only three examples, the Old Akkadian Gasur map, the military map from Aššur and a house plan from Nuzi, discovered at sites in Assyria. The reason for such a weighting of finds to the south is unclear; Donald speculates that maps in Assyria were perhaps drawn on perishable materials such as papyrus and waxed writing boards,⁶⁵⁸ though both Gasur map and the Assyrian military camp map are inscribed on clay tablets. Maps and plans also appear in a number of written references from Assyria, such as the inscriptions of Esarhaddon, though it is unknown whether the type of ‘plans’ referred to in these passages are physical maps drawn on clay or some other material, or rather the layout of buildings conceptualised in some other format.

It has also been shown in this study that the cartographic finds from the south are relatively evenly distributed across the major cities of Babylonia, including Babylon, Eshnunna, Sippar, Dilbat, Girsu, Nippur, Umma, Kish, Uruk and possibly Larsa. While their provenance is in many cases known, however, their archaeological context is generally unclear. It is often unknown, for example, whether these maps were preserved in archives, and whether these archives were private or institutional. Although the field plans from the Temple of Inanna at Nippur were discovered in a secondary context, however, it can be assumed that they were originally housed in the Ur III temple archive. Similarly, the Late Babylonian property plan corpus is likely to represent a single find from an institutional archive in Babylon, which can

⁶⁵⁸ Donald 1962: 190

be tentatively associated with the 'royal registry' established by Darius near the beginning of his reign.

A significant number of the Old Akkadian maps discussed in chapters two and three are from Girsu, divided into sixteen field plans and six building plan fragments. It may be tempting to identify the Girsu tablets as a single find, perhaps stored together in some kind of 'cartographic repository', though there is no record of their archaeological context. Furthermore, while it has been demonstrated in this study that there are a number of shared written and graphic conventions found across all the Old Akkadian Girsu maps, particularly the field plans, it must once again be emphasised that analysis of these tablets is based solely on Thureau-Dangin's line drawings, since the fragments themselves are now lost.

It has been suggested in chapter two, however, that there is enough graphic variation in the Girsu plans to indicate that they were drawn by more than one scribe, and that cartography was therefore, to some extent, an established practice at Girsu during this period. Furthermore, the contemporary Gasur map, discovered at a site almost 450 km from Girsu, shares a number of similarities with these field plans, such as the use of water-lining to indicate rivers and canals and the presence of orientation labels, suggesting that cartography was in fact an established practice across many parts of Mesopotamia by the Old Akkadian period.

This thesis has also resulted in a coherent typology of cartographic material, with maps categorised according to five types: field and agricultural estate plans, maps of irrigation systems, building plans, city plans and regional maps. It must be noted again, however, that many of the tablets which bear these examples are extremely fragmentary, and access to the completely preserved tablet might affect a map's categorisation. Furthermore, while the maps allocated to each of these types share a number of common characteristics, it has also been demonstrated that a number of graphic and written conventions are common to maps across all these categories, where drawing techniques and labelling conventions were adapted according to the type of features or landscape depicted on the map.

The parallel lines used to depict waterways, for example, were adapted to illustrate walls on building and city plans, while other drawing methods used to indicate rivers and canals, such as the water-lining technique, are found on the Old Akkadian field plans, the Late Babylonian Tuba city plan and the Old Akkadian regional Gasur map. Similarly, the practice of using a circle to identify the location of a feature is also found on a number of examples in different categories, such as an Old Akkadian field plan, the Old Akkadian Gasur map, the Kassite

period Nippur field and irrigation network map and the Late Babylonian Map of the World. It has also been shown that the use of aligned and oriented writing is a common feature found across cartographic genres, where captions were aligned towards the feature they describe.

It is now clear that the use of written captions formed an integral part of Near Eastern cartography, where the difficulties of drawing on clay limited the range of graphic symbols scribes were able to use to indicate features. Furthermore, without the use of paints or inks, differentiating features with the use of colours was not an option for Near Eastern scribes. The size of clay tablets also often prohibited the use of fully scaled drawings, and plans were generally drawn to fit the size and shape of the tablets they were inscribed on. In this case, written measurements were fundamental to a full understanding of the designs they show. In the case of the few examples which are correctly scaled, such as the Nippur city plan, the tablets these maps are drawn on are exceptionally large, suggesting that they were made specifically to accommodate the designs they are inscribed with, very likely after a number of initial surveys and sketches were made.

It seems that at present there is no evidence for the existence of scribes who can be defined as ‘cartographers’ in the ancient Near East, though there were clearly officials such as field surveyors who might have been expected to record survey results graphically as well as verbally. As mentioned above, it is likely that the scribes and officials who made these plans were not solely tasked with drawing maps, but rather composed such plans when the need arose as part of their professional roles. Field plans, for example, were probably made by field surveyors, while building plans were made by ancient architects, or scribes who fulfilled a similar function. The decipherment of the unpublished Schøyen irrigation network map made in this study also shows that graphic maps were made for the purposes of canal maintenance projects, and were perhaps composed by officials such as the ‘Inspector of Canals’ or ancient irrigation engineers.

The existence of a number of cartographic tablets which have been identified as school texts is also significant, since it suggests that making maps and plans was not so specialised a practice that it did not form part of the curriculum in some scribal schools. The majority of the school texts in the corpus, such as the round tablets from Kish, are building plans, though if the Assyrian military camp map is also a school text, it appears that scribes might have been expected to draw maps of larger areas at some point during their careers.

The tools used by scribes to compose maps do not appear to have been limited to the standard styluses used for writing, though a number of maps display the thick lines and wedge-shaped line endings which suggest that maps were sometimes drawn with writing styluses. The fineness of the lines found in many examples, however, demonstrates that maps were also composed with fine-tipped drawing instruments. No such instrument has been recovered from the Near East, though its existence is at least suggested by the quality of the drawings found on cartographic tablets. The use of an instrument which can be compared to a pair of compasses is also in evidence on the Babylonian Map of the World, where the circular continent and its encompassing ocean were almost certainly drawn using such an implement, as suggested by the hole incised at the centre of the map.

The purposes of the maps and plans discussed in this thesis vary, though they appear to fulfil one of four functions, which are defined in this study as ‘administrative’, ‘planning’, ‘locational’ and ‘illustrative’. The term ‘administrative’ is used here in a broad sense, though it can be defined as a map or plan which was made in order to serve as some kind of record. It is clear that some field plans, for example, were drawn for use in sale transactions, such as the Late Babylonian property plan corpus, which is likely to have been archived as part of Darius’ ‘royal registry’. It is unknown whether some of the other field plans, however, such as the Old Akkadian examples, were also archived, or whether they were simply used in order to compose more permanent written records before being discarded.

Examples such as the Schøyen irrigation network map were also used as administrative tools, in this case during the planning and organisation of a canal maintenance project, while it has been suggested in chapter five that the Nippur city plan was probably made as part of a Kassite regeneration programme of the city, and was then perhaps preserved in order to be consulted during future rebuilding projects. It is possible that at least one of the building plans discussed in chapter four, the plan dated to the reign of Naram-Sin, also fulfilled some kind of administrative function. This is suggested by the fact that the majority of Near Eastern building plans contain very little additional written information aside from the captions inscribed directly onto the plans, while this tablet bears an inscription listing various groups of people on its reverse, in addition to the graphic plan on its obverse. It is unclear what purpose this document might have fulfilled, though it can be noted that it is unique amongst the building plan corpus of the ancient Near East.

It has been shown that the majority of the building plans discussed in this thesis, however, were almost certainly used as planning tools. The types of buildings depicted in these plans vary, showing a range of secular institutional buildings, cult buildings and private houses, indicating that the use of graphic plans in architectural design was not limited to a particular building type. As discussed above, it seems unlikely that graphic plans were a pre-requisite for the construction of buildings since, if they were, we could expect many more finds than the forty extant examples from the ancient Near East. It is likely that Mesopotamian builders were able to construct buildings without the use of graphic plans, selecting materials and laying out foundations on site through extensive knowledge of the building trade. Rather, these building plans are here considered architectural designs, where the spatial arrangements of buildings were designed before construction took place, and which were composed primarily for the benefit of the building owner.

At least two examples from the building plan collection can be allocated to the third functional category, defined as 'locational' plans. This type serves to show the location of a particular feature or features within a wider topographic or geographic context. The building plan which contains a series of symbols which have been identified as rolling mills, for example, is one such plan. In this case, all the rooms in this building are identified with written labels, with the exception of a series of rooms on the left hand side of the building, which contain drawings of these devices. The use of these graphic symbols on a plan which also uses written labels to identify room functions is significant, since it suggests that the purpose of these symbols is to indicate the *location* of these devices within the wider context of the building, perhaps because this was where they were due to be installed.

Indeed, it has been shown that written captions were often used on Near Eastern plans to simply indicate the presence of a feature, such as the buildings located on fields in the Late Babylonian property plan corpus. However, when the specific location of a feature is identified, as in the case of the rolling mills plan, it is often indicated graphically. A number of interpretations have previously been offered for the Ur III ziggurat plan which features a series of circles, yet an examination of the plan within the wider context of Near Eastern cartography has allowed a new interpretation to be offered in this study. It is here categorised as a locational plan, since it is likely that the circles drawn on the tablet represent ritual items which were not part of the architectural fabric of the building, but were arranged outside the ziggurat for a specific ritual. Much like the written texts which also contain graphic guides

for the correct arrangement of cult items, the Ur III ziggurat plan is likely to have functioned as a visual guide showing the correct locations of the items symbolised by circles.

Though it depicts a different type of environment to the locational building plans, the Gasur map discussed in chapter five also fulfilled a similar function; in this case, it shows the location of an agricultural estate within the wider geographic context of a river valley on the shores of Lake Zerivar in Kurdistan. Thus, it has been demonstrated that locational plans serve to show the position of a single feature or multiple features within a wider area, whether this area was limited to the confines of a building or a geographic region of 10 km², as in the case of the Gasur map.

The final functional category which has been defined in this study is that of the ‘illustrative’ map, containing examples which illustrate written texts. A number of these maps are found on pieces of monumental architecture and sculpture; the kudurru plans for example, provide graphic illustrations of the agricultural estates described in the inscriptions carved on these commemorative stones. Similarly, the building plans found on Gudea Statue B and the Stele of Nebuchadnezzar II illustrate the concepts of planning and building, with which the textual content of both monuments is primarily concerned. It is also evident that such illustrations are only effective in these cases when they are familiar to the viewer, suggesting that graphic plans were widely associated with the concepts of planning and buildings, thus providing a suitable visual accompaniment to the inscriptions of Gudea and Nebuchadnezzar.

The Tuba city plan can also be considered an illustrative map, since it has been shown in chapter five that its purpose was to illustrate the metrological commentary found on the reverse of the tablet it is drawn on. The Babylonian Map of the World also uses a graphic map to illustrate a textual description of the world, conceptualised as a linear journey. Much attention has previously been paid to the ‘inaccuracies’ found on the map, yet its purpose was clearly not to provide a true account of Babylonian geographical knowledge, which should rather be sought in the written documents of the ancient Near East such as the itinerary texts.

Finally, our conclusion must be that cartography was an established practice in Mesopotamia, and that the extant maps and plans of the ancient Near East should not simply be considered ‘curiosities’, pushed to the peripheries of cuneiform culture in favour of the perhaps better-attested written documentary genres. Indeed, the rich history of map-making in evidence from the tablets and artefacts discussed in this thesis now allows us to place cartography firmly in the canon of scientific, literary and artistic achievements of the ancient Near East.

APPENDICES

APPENDIX ONE: CATALOGUE OF TABLETS

NAME	COLLECTION AND CATALOGUE NUMBER	PERIOD	DIMENSIONS AND MATERIAL	PROVENANCE AND FINDSPOT
The Çatal Hüyük wall mural	N/A	c. 6200 BCE	Paint on plaster	Çatal Hüyük, in situ
The Tepe Gawra Vase	Formerly the National Museum of Iraq, Baghdad, now missing. Catalogue number unknown	c. 4200 BCE	Red or brown paint on pottery	Tepe Gawra, found beneath the eastern wall of Room 206 in Level VII (dated to c. 4200 BCE)
Old Akkadian field plans	Formerly the Louvre, now missing. Accession numbers: AOT b 357-36960 AO 3390	Old Akkadian	Dimensions unknown Clay	Girsu, findspot unknown

Ur III field plans	See Liverani 1990	Ur III	Clay	Various sites in southern Mesopotamia
The 'Hinke' Kudurru	University Museum Pennsylvania	Middle Babylonian	Basalt	Nippur, the Temple Precinct
Kudurru fragment	British Museum BM 104405	Middle Babylonian	14 x 17.1 x 8.3 cm Limestone	Unknown
Kudurru fragment	British Museum BM 103215	Middle Babylonian	5.4 x 7.1 cm Limestone	Unknown
Late Babylonian field plans	See Nemet-Nejat 1982	Late Babylonian	Clay	Babylon, findspot unknown

The Schøyen Irrigation Network Map	Schøyen Collection MS 3196	Old Babylonian	9,5 x 12 x 2,8 cm Clay	The Larsa region? Findspot unknown
The Nippur canal and field network map	University Museum Pennsylvania CBS 13885	Kassite	11 x 7.5 x 2.5 cm Clay	Nippur Findspot unknown
The Sippar waterway map	British Museum BM 50644	Late Babylonian	8.4 x 8.9 cm Clay	Dilbat? Findspot unknown
The Arahtum Canal Fragment	Formerly the Pergamon Museum, now lost. Catalogue number unknown	Late Babylonian?	Dimensions unknown Clay	Unknown

The 'House of Puta' plan	Formerly the Louvre, now missing. Accession number AOT b 361	Old Akkadian	Dimensions unknown Clay	Girsu Findspot unknown
A house plan from Girsu	Formerly the Louvre, now missing AO 6306	Old Akkadian	Dimensions unknown Clay	Girsu Findspot unknown
A 'double' house plan from Eshnunna	Chicago Oriental Institute? (Unknown, According to Heisel 1993)	Old Akkadian	Dimensions unknown Clay	Eshnunna Findspot unknown
A fragment of a public building from Girsu	Formerly the Louvre, now missing AOT b 357	Old Akkadian	5.5 x 5.4 cm Clay	Girsu Findspot unknown

A building plan from Girsu dated to the reign of Naram-Sin	Formerly the Louvre, now missing AOT b355	Old Akkadian	Reconstructed by Thureau-Dangin to 11.5 x 20 cm Clay	Girsu Findspot unknown
A plan of a building within an enclosure	Meek 1935 (no. 5)	Old Akkadian	Dimensions unknown Clay	Nuzi, findspot unknown
A plan of a temple within an enclosure	Formerly the Louvre, now missing AO b359	Old Akkadian	Dimensions unknown Clay	Girsu Findspot unknown
An almost complete plan of a temple	Formerly the Louvre, now missing AOT b 356	Old Akkadian	Dimensions unknown Clay	Girsu Findspot unknown
A house plan from Umma	Pergamon Museum, Berlin VAT 7031	Ur III	12 x 11.3 cm Clay	Umma Findspot unknown

A plan of a building from Nippur	National Museum of Iraq, Baghdad 6NT-553	Ur III	6.2 x 9.1 cm Clay	Nippur Findspot unknown
A fragment of a 'labyrinthine' building plan	National Museum of Iraq, Baghdad Catalogue number unknown	Ur III	15.5 x 12.9 cm Clay	Nippur Findspot unknown
The John Rylands Library plan	The John Rylands Library Clay Tablet 930	Ur III	11.1 x 9.2 cm Clay	Provenance and findspot unknown
A plan of a ziggurat high temple	Hilprecht Collection HS 200 a 1 + 2	Ur III	15 X 12.5 cm Clay	Nippur Findspot unknown Girsu

Gudea Statue B	Musée du Louvre AO 2	Ur III	L 29 cm Diorite	Findspot unknown
A round school text from Kish	Formerly the Louvre? Catalogue number unknown	Old Babylonian	Diameter 9.8 cm Clay	Kish Findspot unknown
A round school text from Kish	Formerly the Louvre? Catalogue number unknown	Old Babylonian	Dimensions unknown Clay	Kish Findspot unknown
A plan of a courtyard style house	Musée du Louvre? Excavation number T139, catalogue number unknown	Old Babylonian	Dimensions unknown Clay	Larsa? Findspot unknown
A plan of part of the palace or Nur-Adad	Schøyen Collection MS 3031	Old Babylonian	12 x 8.8 x 2.5 cm Clay	Larsa? Findspot unknown

A plan of a single room temple	British Museum BM 132254	Old Babylonian	11.4 x 8.3 cm Clay	Provenance and findspot unknown
A building plan dated to the reign of Abi-Esuh	British Museum BM 86394	Old Babylonian	8 x 6 cm Clay	Provenance and findspot unknown
Three fragments of plans from Kish	Location and catalogue numbers unknown	Old Babylonian	Dimensions unknown Clay	Kish Findspot unknown
A house plan in the National Museum of Iraq	National Museum of Iraq, Baghdad IM 44036	Middle Babylonian	Dimensions unknown Clay	Provenance and findspot unknown
A single line plan showing a combination of building types	British Museum BM 46740	Late Babylonian	5.2 x 6 cm Clay	Provenance and findspot unknown

<p>A fragmentary plan of a palatial house</p>	<p>Pergamon Museum VAT 413</p>	<p>Late Babylonian</p>	<p>12 x 10 cm (reconstructed from three fragments) Clay</p>	<p>Provenance and findspot unknown</p>
<p>A double-sided plan in the British Museum</p>	<p>British Museum BM 80883</p>	<p>Late Babylonian</p>	<p>9.5 x 6.9 cm Clay</p>	<p>Sippar? Findspot unknown</p>
<p>A Late Babylonian building plan with a brick grid</p>	<p>British Museum BM 68841+ 68842 + 68843 + 68845 + 83002</p>	<p>Late Babylonian</p>	<p>23 x 31 cm (reconstructed from five fragments) Clay</p>	<p>Sippar? Findspot unknown</p>
<p>A aerial perspective plan of the stages of a ziggurat</p>	<p>Pergamon Museum VAT 8322 + 12886</p>	<p>Late Babylonian</p>	<p>7.9 x 13.5 cm (reconstructed from two fragments). Clay.</p>	<p>Provenance and findspot unknown</p>

A vertical perspective plan of a ziggurat	British Museum BM 38217	Late Babylonian	6.3 x 5 cm Clay	Babylon? Findspot unknown
The 'Tower of Babel' Stele	Schøyen Collection MS 2063	Late Babylonian	47 x 25 cm Probably basalt	Babylon? Findspot unknown
A ground plan fragment with a set of stairs	Formerly Louvre Catalogue number unknown	Achaemenid	Dimensions unknown Clay	Susa Tell d'Acropole?
A ground plan fragment with a toilet	Formerly Louvre Catalogue number unknown	Achaemenid	Dimensions unknown Clay	Susa Tell d'Acropole?
The Uruk City Plan fragment	Location and catalogue number unknown	Unknown	8.1 x 11.2 cm Clay	Uruk Findspot unknown

The Nippur City Plan	Hilprecht Collection HS	Kassite	21 x 18 cm Clay	Nippur Findspot unknown
A Plan of the Tuba District in Babylon	British Museum BM 35385	Late Babylonian	7.9 x 10.7 cm Clay	Babylon? Findspot unknown
A fragment of a plan showing part of an unknown city	British Museum BM 73319	Late Babylonian	4.1 x 7.6 cm Clay	Sippar? Findspot unknown
A square Old Babylonian labyrinth tablet	Schøyen Collection MS 4515	Old Babylonian	6.9 x 6.6 cm Clay	Provenance and findspot unknown
A rectangular Old Babylonian labyrinth tablet	Schøyen Collection MS 3194	Old Babylonian	11.7 x 10.3 cm Clay	Provenance and findspot unknown

The Gasur Map	Harvard Museum SMN 4172	Semitic	Old Akkadian	6.8 x 7.6 cm Clay	Gasur Found in Room L4, Palace Area
An Assyrian military map	Pergamon Museum VAT 9243		Unknown	Dimensions unknown Clay	Aššur Findspot unknown
The Louvre 'Tablet Map'	Musée du Louvre AOT 7795		Neo-Babylonian?	12 x 7.5 x 2.9 cm Clay	Provenance and findspot unknown
The Babylonian Map of the World	British Museum BM 92687		Late Babylonian	12.2 x 8.2 cm Clay	Sippar Findspot unknown

APPENDIX TWO:

ANCEINT NEAR EASTERN MENSURATION

All information is taken from Powell, M. A. 1987. 'Masse und Gewichte.' *RLA* VII and Baker, H. D. 2004. *The Archive of the Nappāḫu Family* (AfO 30)

Sumerian-Babylonian Length Measurements:

Barleycorn (*še/uṭṭetu*) = 0.28 cm

Finger (*šu-si/ubānu*) = 1.666 cm [note this is the standard pre-Sargonic to OB, the other two attested are described as the "big" Kassite finger = 3.125 cm; NB-LB finger = 2.08333 cm]

1/3 cubit (*šu-dù/šīzu* or *šizû*) = 10 fingers = 16.66 cm

½ cubit (*zipaḫ/ūtu*) = 25 cm

Cubit/ell "forearm" (*kùš/ammatu*) = 4 native types:

standard pre-Sargonic to OB (also written GIŠ.BAD in Akkad period) = 50 cm

seed cubit (of 2 GIŠ.BAD, Akkad period only) = 1 m

the pace cubit (*ammāt arê*) or big cubit (*ammatu rabītu*) (NB-LB) = 75 cm

the NB-LB cubit = 50 cm but divided differently from OB cubit)

Half-reed (*nikassu*) = 3 cubits = 1.5 m

Reed (*gi/qanû*):

Pre NB-LB = 6 cubits = 3 m

NB-LB and Assyrian = 7 cubits = 3.5 m

Rod or pole (nindan/nindānu):

Pre NB-LB = 12 cubits = 6 m

NB-LB and Assyrian = 14 cubits = 7 m

½ rope (*šuppu*):

usually written with ‘1/2 + ÉŠ’ (half rope) or ‘5 + NINDA(.DU) = 60 cubits = 30 m

Rope (*éše/ašlu*) = 120 cubits (forms the side of a 1 iku area square) = 60 m

UŠ = 6 ropes = 360 m

Dana/danna/*bēru* = 180 ropes = 10800 m = 10.8 km [confirmed as a ‘double hour’ by CDA]

The Sumerian – Babylonian Length Measurement System using reeds:

1 length GAR = 14 cubits = c. 7 m

1 length reed (*gi*) = 7 cubits = c.3.5 m

1 length *nikkas* = 3.5 cubits = c. 1.75 m

1 length cubit (*kùš*) = 1 cubit = c. 0.5 m

1 length finger (*šu.si*) = 1/24 cubit = c. 0.0208333 m

Sumerian-Babylonian Area Measurements

Barleycorn (*še/uṭṭetu*) = 12 sq fingers

Little shekel (*gín-tur*) = 36 sq fingers

Little mina (*ma-na-tur/manû šaḥru*) = 720 sq fingers

Shekel (*gín/šiqḷu*) = 2160 sq fingers

Garden plot (s/šar/mušaru) = 36 m²

¼ dike (iku) = 25 s/šar = 900 m²

½ dike (ubu/ub/pû) = ½ iku = 40 s/šar = 1800 m²

Dike (iku/ikû) = 100 s/šar = 3600 m² = 0.36 ha = 0.88 acres

Rope of land (èše/eblu) = 6 iku = 21600 m² = 216 ha = 533.7 acres

Bûr/bûru = 18 iku = 64800 m² = 648 ha = 1601.2 acres

The Sumerian-Babylonian Area Measurement System using reeds (used particularly for smaller areas, especially urban plots)

1 surface GAR = c. 24.5 m²

1 surface reed (gi) = c. 12.25 m²

1 surface nikkas = c. 6.125 m²

1 surface cubit (kùš) = c. 1.75 m²

1 surface finger (šu.si) = c. 0.0729 m²

The Babylonian Seed System (used for larger areas)

1 gur = c. 13,500 m²

1 PI = c. 2,700 m²

1 bán = c. 450 m²

1 silà = c. 27 m²

1 GAR = c. 7.5 m²

Sumerian-Babylonian Volume Measurements

Can only be securely described for the Akkad-OB period, and is based on the core definition:

$$\begin{aligned} &1 \text{ šar of area by 1 cubit of height/depth} = 1 \text{ šar of volume} \\ &= 60 \text{ shekels of volume} = 60 \text{ gur (=18000 sila) of capacity} \end{aligned}$$

The units are written using the same symbols as surface units, and nomenclature is identical.

Barleycorn (*še/uṭṭetu*) = 1.666 litres

Little shekel (*gín-tur*) = 5 litres

Little mina (*ma-na-tur/manû saḫru*) = 100 litres

Shekel (*gín/šiqḷu*) = 300 litres

Garden plot (*s/šar/mušaru*) = 18 m³

1/8 iku = 225 m³ (pre-Sargonic only)

1/4 iku = 450 m³

1/2 iku (*ubu/ub/pû*) = 900 m³

iku = 1800 m³

Rope (*èše/eblu*) = 10800 m³

Bùr/*būru* = 32400 m³

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Online Resources:

Electronic Pennsylvania Sumerian Dictionary (ePSD)

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PLATES
